

City of Dover, et al.
vs.
State of New Hampshire, et al.

Deposition of Paul M. Currier
6/12/12

City of Dover, et al. vs. State of NH, et al.
Deposition of Paul M. Currier 6/12/12

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STATE OF NEW HAMPSHIRE

MERRIMACK, SS.

SUPERIOR COURT

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CITY OF DOVER, TOWN OF EXETER, TOWN
OF NEWMARKET, CITY OF PORTSMOUTH,
AND CITY OF ROCHESTER

v.

NO. 217-2012-CV-212

STATE OF NEW HAMPSHIRE AND NEW
HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES

* * * * *

DEPOSITION OF PAUL M. CURRIER

This deposition was taken at the offices of
Sheehan, Phinney, Bass + Green, 1000 Elm
Street, Manchester, New Hampshire, on
Tuesday, June 12, 2012, commencing at 9:03
a.m.

City of Dover, et al. vs. State of NH, et al.
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APPEARANCES

Representing the Petitioners:

HALL & ASSOCIATES
1620 I Street, NW
Suite 701
Washington, D.C. 20006
By: John C. Hall, Esq.
jhall@hall-associates.com

Representing City of Portsmouth:

NELSON, KINDER + MOSSEAU, PC
99 Middle Street
Manchester, New Hampshire 03101
By: E. Tupper Kinder, Esq.
ekinder@nkmlawyers.com

Representing City of Dover:

SHEEHAN, PHINNEY, BASS + GREEN
1000 Elm Street, P.O. Box 3701
Manchester, New Hampshire 03105-3701
By: Robert R. Lucic, Esq.
John E. Peltonen, Esq.
rlucic@sheehan.com
jpeltonen@sheehan.com

Representing City of Rochester:

RATH, YOUNG & PIGNATELLI
One Capital Plaza, P.O. Box 1500
Concord, New Hampshire 03302
By: Andrew W. Serell, Esq.
aws@rathlaw.com

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Deponent

Paul M. Currier

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Representing the Defendants:

OFFICE OF THE ATTORNEY GENERAL
Environmental Protection Bureau
Department of Justice
33 Capitol Street
Concord, New Hampshire 03301
By: Evan J. Mulholland, Esq.
evan.mulholland@doj.nh.gov

Court Reporter: Megan M. Hefler, LCR, RDR
Registered Diplomat Reporter
Licensed Court Reporter
NHLCR No. 61 (RSA 310-A)

In Attendance: Dean Peschel

STIPULATIONS

It is agreed that the deposition shall be taken
in the first instance in stenotype and when
transcribed may be used for all purposes for which
depositions are competent under New Hampshire
practice.

Notice, filing, caption and all other formalities
are waived. All objections except as to form are
reserved and may be taken in court at time of trial.

It is further agreed that if the deposition is
not signed within 30 days after submission to counsel,
the signature of the deponent is waived.

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1 PAUL M. CURRIER, being first duly sworn,
2 deposes and states as follows:
3 EXAMINATION
4 Q. (BY MR. HALL) Good morning.
5 A. Good morning, John.
6 Q. Mr. Currier, could you state your -- oh, actually,
7 before we get into all the formalities.
8 MR. HALL: We've covered that the normal
9 stipulations are applying, Evan; is that fine?
10 MR. MULHOLLAND: That's fine.
11 Q. Okay. Mr. Currier, could you please state your
12 full name for the record?
13 A. Paul M. Currier.
14 Q. And could you give us an idea of what your current
15 employment status is?
16 A. I'm currently retired.
17 Q. Very good. And when did you retire?
18 A. June 1st, 2011.
19 Q. Congratulations. I hope you're having a restful
20 retirement.
21 A. Yes, indeed.
22 Q. Is this the first time you've ever been deposed?
23 A. No.

1 Q. Can you tell me about how many times you've been
2 deposed before?
3 A. Once.
4 Q. Once. Well, we'll try to make this as equally
5 pleasant an experience and hopefully more so. I'd
6 like to go over just a little bit of background
7 first on your prior positions with the Department
8 of Environmental Services. Can you give us a
9 rundown, say for the last 10 years, regarding your
10 positions prior to your retirement?
11 A. Yes. For a little more than 10 years I was
12 administrator of the Watershed Management Bureau
13 at the Department of Environmental Services.
14 Q. Okay. And --
15 A. I was actually the first administrator of the
16 Watershed Management Bureau.
17 Q. The first administrator.
18 A. Under a reorganization.
19 Q. Congratulations. Within that, the scope of your
20 work what were you responsible for doing?
21 A. Various programs related to surface water quality.
22 Q. Okay. Did you deal with Great Bay issues?
23 A. Yes.

1 Q. How much of your time do you think was devoted to
2 Great Bay issues?
3 A. Over, over the 10 years not a lot, but over the
4 last two or three years perhaps five or ten
5 percent, something like that.
6 Q. So a considerable amount of your --
7 A. Yes.
8 Q. Yeah. Okay. And with your involvement on Great
9 Bay issues were you, did you participate in their
10 Technical Advisory Committee?
11 A. Periodically, yes.
12 Q. Periodically.
13 A. Yeah.
14 Q. And can you give me an idea of what kind of role
15 you played when you participated with that
16 committee?
17 A. Basically I was a technical supervisor of the
18 staff person for the committee, Phil.
19 Q. Phil Trowbridge?
20 A. There you go.
21 Q. You were Phil's supervisor?
22 A. Yes.
23 Q. What about Ted Diers, were you Ted's supervisor in

1 any way?
2 A. Yes, for -- for -- I forget -- two or three years.
3 There was rearrangement of the Coastal Program,
4 and the Coastal Program became part of the
5 Watershed Management Bureau.
6 Q. And Mr. Diers was involved on Great Bay water
7 quality issues, correct?
8 A. Right. He was the manager of the Coastal Program.
9 Q. Okay. So he had direct responsibility on that
10 issue?
11 A. Well, he had direct responsibility for the Coastal
12 Program, which is a federal program funded by
13 NOAA.
14 Q. Okay. And that included Great Bay issues?
15 A. It included Great Bay and the coastal area as
16 defined by NOAA.
17 Q. Gotcha. The Technical Advisory Committee, can you
18 give me an idea of some of the responsibilities or
19 issues that that committee was looking into?
20 A. It -- the Technical Advisory Committee was, as I
21 recall, a body that was formed under the estuaries
22 project, which is now -- I forget. Its name
23 changed. But anyway, it was the Technical

1 Advisory Committee for the estuaries project, and
2 its job was to advise the estuaries management
3 committee on -- and I may get the name of that
4 committee wrong -- on technical issues related to
5 implementation of the, of the estuaries program.
6 There was a document with, with lots of
7 implementation steps, and the Technical Advisory
8 Committee's role was to advise on those.
9 Q. Did that include assessments of whether different
10 areas of the estuary were impaired and the causes
11 thereof?
12 A. No.
13 Q. No. Did that include recommendations on numeric
14 criteria development to protect the estuary?
15 A. Yes.
16 Q. And -- okay. Within your management on Great Bay
17 issues did you have much involvement with Dr. Fred
18 Short?
19 A. Not much.
20 Q. Do you know if the department relied on any of
21 Dr. Short's claims regarding causes of eelgrass
22 decline in Great Bay?
23 A. Dr. Short was a participant in the advisory

1 when you look --
2 A. Yeah. General review and being aware of the work
3 that he was doing. Again, he was working for the
4 estuaries project under a, I don't want to say a
5 memorandum of agreement, but anyway, under a -- it
6 was a contractual arrangement between us and, DES
7 and the estuaries project.
8 Q. All right. I'm going to hand you a copy of --
9 it's the New Hampshire's Narrative Water Quality
10 Standard, and that's -- probably end up marking
11 that. Ah, we'll wait until I finish asking you
12 questions. And you can assume that I've correctly
13 typed the version. That can be, that can be
14 verified and/or objected to later.
15 Are you familiar with the state's narrative
16 water quality standard as it applies to nutrients?
17 A. Yes, I am.
18 Q. You've seen this before?
19 A. I have.
20 Q. I've got a few just general questions I wanted to
21 ask you about how this, how this rule is
22 implemented. Looking at provision (b), the one
23 that says, "Class B waters shall contain no

1 committee, as I recall.
2 Q. But do you know if the department relied on any of
3 his recommendations as to causes of eelgrass
4 decline?
5 A. Not to my knowledge.
6 Q. Not to your knowledge. Okay. All right. I'm
7 going to -- let me ask you one more backup
8 question to try to clear some of the cobwebs away.
9 The State of the Estuaries reports, can you give
10 me an idea of what your involvement might have
11 been in review or participation in the State of
12 the Estuaries reports?
13 A. Not extensive. As you know, Phil Trowbridge
14 functioned in a dual role. He was the coastal
15 scientist for the estuaries project, and he was
16 also under my technical supervision at DES, so my
17 role in the State of the Estuaries report was one
18 of technical supervision.
19 Q. Okay. So if Phil had various conclusions or
20 findings in the State of the Estuaries report,
21 would you have been responsible for reviewing
22 whether or not those conclusions were adequately
23 supported? Or can you give me -- what did you do

1 nitrogen or phosphorus in such concentrations that
2 would impair any existing designated uses, unless
3 naturally occurring," are you familiar with that
4 provision?
5 A. Yes.
6 Q. Okay. Under that provision -- can you describe to
7 me how that provision works? How has the
8 department historically implemented that
9 provision? How do you decide whether or not
10 nitrogen or phosphorus is impairing an existing or
11 designated use?
12 A. Well, in recent years we document how we make
13 those decisions in the Consolidated Assessment and
14 Listing Methodology.
15 Q. Okay. But can you just describe to me -- oh. Can
16 you describe to me how you make those decisions?
17 How do you decide if nitrogen or phosphorus is
18 causing an impairment?
19 A. The basic process is to examine the designated
20 uses. And I used to be able to rattle off the
21 list but I --
22 Q. It's okay.
23 A. One of them is aquatic life, and basically the

1 process would involve -- for aquatic life, for
2 example, the process would involve identifying the
3 aquatic life that inhabits the water body,
4 identifying the limiting factors for the health
5 and happiness of that aquatic life and identifying
6 set points at which there would be an impairment
7 of the, say, in this case, using aquatic life as
8 an example. And all of that is documented in the
9 CALM.
10 Q. Okay. Let me -- let me try to ask the question a
11 little differently. Nitrogen and phosphorus are
12 not toxics, correct?
13 A. Everything is toxic at a certain amount, but
14 they're not -- they're not -- they're considered
15 nutrients, not toxics.
16 Q. Considered nutrients. I mean, at the levels that
17 are commonly found in the environment, for
18 example, in Great Bay, they're not toxic, right?
19 A. Not in the -- no, not in the, not in the general
20 sense. They're not on EPA's list of toxic
21 substances.
22 Q. Are they on any DES list of toxic substances?
23 A. No.

1 Q. No. So if I have a level of nitrogen or
2 phosphorus, it has to, what, generally cause some
3 kind of excessive plant growth to cause an impact,
4 correct?
5 A. Well, cause -- that is one impact that would be
6 defined as an impairment of a designated use.
7 Q. So let me -- let's go through the sequence. Well,
8 so just the fact that I have a certain nitrogen or
9 phosphorus concentration in the water doesn't tell
10 me I've got an impairment, correct?
11 A. That's correct.
12 Q. Okay. Then you look to see whether the nitrogen
13 or phosphorus causes a certain other adverse
14 effect to occur; would that be the correct
15 statement?
16 A. Yes.
17 Q. Okay. And at least with regard to -- let's look
18 at subsection (c). It says, "Which encourage
19 cultural eutrophication," which is defined as,
20 further defined in the regs as "excessive plant
21 growth or a decrease, and/or a decrease in
22 dissolved oxygen."
23 So the nitrogen or phosphorus needs to

1 trigger some type of excessive plant growth under
2 your narrative criteria; wouldn't that be correct?
3 A. The answer is not necessarily.
4 Q. Okay. Could you explain?
5 A. Well, for example, nitrogen is a component of
6 ammonia. Ammonia is directly toxic to fish.
7 Q. Let me stop you there. Completely excluding
8 toxicity effects from subfractions like ammonia,
9 because they're separately regulated, correct?
10 A. Ammonia is separately regulated.
11 Q. We're just talking nutrients as total nitrogen or
12 total phosphorus. The effect that you look for in
13 the water body, isn't the effect some type of
14 excessive plant growth that then might trigger
15 other adverse effects happening in the water
16 colony?
17 A. Under this, yes.
18 Q. I mean, that's all I was trying to get at. I'm
19 trying to understand like if I'm the public and
20 I'm reading this document and I'm trying to
21 understand what the purpose of the narrative
22 criteria is. So the purpose isn't to just
23 regulate any concentration of nitrogen and

1 phosphorus. It's to regulate concentrations of
2 nitrogen and phosphorus that cause excessive plant
3 growth and thereby harm beneficial or designated
4 uses?
5 A. Yes. In the context of cultural eutrophication,
6 yes.
7 Q. Is there any other -- other than the ammonia point
8 that you were talking about, is there anything
9 else other than cultural eutrophication that
10 nitrogen and phosphorus adversely impacts in terms
11 of beneficial use?
12 A. Yes.
13 Q. Okay. Can you explain?
14 A. And I am not an expert in aquatic biology, but it
15 was my understanding based on the literature that
16 nitrogen can be directly toxic to eelgrass.
17 Nitrate can be directly toxic to eelgrass.
18 Q. I'm sorry. Could you -- which form of nitrogen?
19 A. I believe it's nitrate.
20 Q. Nitrate can be directly toxic. And based on this
21 narrative criteria how would I know -- is there
22 any way for me to know that nitrate is going to be
23 regulated under this narrative criteria when I

1 read this? I mean, I'm the public, I'm picking up
2 this document, and I'm trying to decide, to know
3 how I'm being regulated. How would I know that
4 nitrate toxicity to eelgrass is being regulated
5 under this?
6 A. It wouldn't be, actually.
7 Q. Okay.
8 A. It would be more likely to be regulated under the
9 biological integrity narrative standard.
10 Q. Ah. Kind of no toxic in toxic amounts, or
11 something like that?
12 A. No. I can't quote you the book and page.
13 Q. Okay. But it wouldn't be regulated under this
14 provision, it would be regulated under something
15 else if it was causing that effect?
16 A. Right.
17 Q. Okay.
18 A. Obviously, yeah.
19 Q. Okay. All right. So -- so let me just wrap this
20 up. So this narrative standard, when it's
21 applied, you look for some kind of causal effect
22 that nitrogen or phosphorus caused, something
23 caused excessive plant growth, and then that

1 caused an impact on the beneficial use, right?
2 A. Right.
3 Q. Okay. I think I now understand how this --
4 A. Yeah. Although -- although, this rule basically
5 applies to cultural eutrophication, and the end
6 point is the excessive plant growth.
7 Q. Okay. And let's take another -- let's just do a
8 slight example of this. Suppose I had nitrogen or
9 phosphorus discharge into the water body and it
10 didn't cause a change in plant growth. Would that
11 nitrogen or phosphorus be considered in violation
12 of this provision in any event?
13 A. No. I don't believe so.
14 Q. Sometimes it's helpful to ask a question in the
15 negative --
16 A. Right.
17 Q. -- after you've asked it in the positive. I'm
18 just trying to get things straight. Okay. Well,
19 thank you for your clarification on that.
20 MR. HALL: Let's mark that as Exhibit --
21 what are we up to, 20 --
22 (Reporter responds.)
23 (Exhibit 28 marked.)

1 Q. What I'm going to do next, Mr. Currier -- by the
2 way, Paul, is it Dr. Currier?
3 A. No.
4 Q. Okay. I was just -- occasionally -- you know, for
5 some reason I thought you had a doctorate in an
6 area, but I was confused. It must be because you
7 usually give pretty clear answers on things, so --
8 A. Thank you.
9 Q. No. Quite all right. What I'd like to do is give
10 a little, let's call this a walk-through history
11 on -- I'm going to kind of go back in time over
12 the sequence of events that led up, I guess,
13 eventually to impairment listings and then the
14 draft criteria and then the MOA and things like
15 that, the whole sequence. I know you were
16 involved in a good part of this. You weren't
17 necessarily involved in everything in detail. So
18 to the degree you remember, you know, what
19 happened and why it happened, it's great. If you
20 don't, you know, maybe someone else will remember.
21 I'd like to start with the Technical Advisory
22 Committee and the needs to develop numeric
23 nutrient criteria. Okay. Can you tell me why,

1 why the state felt it needed to develop numeric
2 nutrient criteria for Great Bay?
3 A. Well, there were two reasons. EPA was encouraging
4 states to develop numeric nutrient criteria in
5 fact for all water body types and had put forth
6 various guidance and was seeking agreements and
7 timetables with us and other states to do that.
8 And the other, the other reason was basically the
9 estuaries project process to implement their
10 management plan. And the biological health to
11 Great Bay was a significant concern in their
12 management plan.
13 Q. Okay. I'm going to show you a document. We'll
14 mark it as -- let me show you this document first.
15 It's a -- this was a presentation done by Matthew
16 Liebman, USEPA. He did the presentation to the
17 Technical Advisory Committee, and I believe it was
18 in September 2005. You can check the record. And
19 do you recall this presentation at all? Do you
20 remember if you were there for it?
21 A. I don't think I was. Anyway, I don't recall it.
22 Q. Okay.
23 A. I was aware of it.

1 Q. You were aware of it. I'd like you to look at
2 the, what we'll call -- ah, you are already
3 looking at it, the first page of the document.
4 The title is, "We have lots of problems, so let's
5 get started." And it talks about EPA's nutrient
6 strategy. And the first bullet identifies that
7 there are a few different approaches. I guess the
8 idea is you're going to try to keep nutrient
9 levels below conditions that cause nuisance and
10 impairments of uses, like any other water quality
11 criteria. That's the purpose of a criteria,
12 right, to protect the use, a numeric criteria --
13 A. Right.
14 Q. -- to protect the use, and certainly not allow a
15 nuisance condition to exist, right?
16 A. Right.
17 Q. Okay. And the last bullet, it says they want the
18 state to adopt the criteria into state water
19 quality standards. Was it, was it your
20 understanding that when, the development of a
21 numeric criteria that eventually, or the purpose
22 of it was to be eventually adopted into state
23 water quality standards?

1 A. Yes.
2 MR. HALL: We'll just mark that as
3 Exhibit --
4 (Reporter responds.)
5 MR. HALL: Twenty-nine.
6 MR. KINDER: Can we take a short break?
7 (Discussion off the record.)
8 (Exhibit 29 marked.)
9 (Recess taken; 9:25-9:32 a.m.)
10 Q. (BY MR. HALL) Paul, in advance of this TAC group
11 that was looking at the numeric nutrient criteria
12 development there was some of these State of the
13 Estuaries reports done. And I'm going to show you
14 a couple of them. I reviewed these all with
15 Dr. Short, and I can paraphrase what his
16 conclusions were, but why don't we just go through
17 a couple of these and just see whether or not your
18 understanding was any different.
19 This was Exhibit 16 from the Fred Short
20 deposition. It's the -- it's the 2000 State of
21 the Estuaries report. And I'm going to just bring
22 your attention to -- well, actually, let me ask
23 you. Have you seen that report before?

1 A. Probably, but I don't recall.
2 Q. One of many that had been prepared over the years
3 for Great Bay, right?
4 A. Yes.
5 Q. What's the purpose of the State of the Estuaries
6 report, can you tell me generally?
7 A. In general it's to track the indicators of things
8 of concern to the Estuaries Management Project and
9 to track them and report, report on them over
10 time.
11 Q. Okay. Indicators such as, say, like nitrogen
12 level, chlorophyll-a changes, eelgrass changes,
13 oyster changes, just a whole range of different
14 factors; correct?
15 A. Yes. And lots of others. There was one on
16 impervious surface, for example. A whole range of
17 things that had been identified in the, in the
18 work plan of the estuaries project as important.
19 Q. Okay. I'm going to, I'm going to bring your
20 attention to two statements in the report.
21 They're on page 13, 14. I can read them to you.
22 A. Okay.
23 Q. And one is -- the first one is under "nutrients."

1 It starts on page 13, goes over to page 14.
2 There's a -- as a matter of fact, you probably
3 should turn to page 14 because there's a nice
4 little chart there that shows what the nutrient
5 levels are doing.
6 A. No page numbers.
7 Q. Oh, let me have it. That was another one of those
8 where the page numbers were very lightly copied on
9 the bottom. It was hard to see. I think we went
10 through that last time at Fred Short's deposition.
11 A. Color doesn't reproduce as well.
12 Q. It's easier to find when it's in color as always.
13 Ah, there (indicating).
14 MR. MULHOLLAND: And Paul, feel free to
15 take your time and look around it, if you want,
16 for context.
17 Q. And I'm going to just read you, it's a quote that
18 starts on page 13, the bottom of 13, goes over to
19 14. It says, "Evidence suggests that nutrient
20 concentrations within the main area of the bay
21 have not changed significantly over the past 20
22 years. No widespread eutrophication effects have
23 been observed." Then I'll skip a sentence, and it

1 goes, "Documented effects on phytoplankton blooms
2 in other areas are rare. Eutrophication and
3 related impacts do not appear to be imminent, an
4 imminent widespread problem." This is in 2000.
5 So in 2000 this report is indicating: "I'm not
6 seeing eutrophication impacts in Great Bay yet."
7 Is that a fair statement?
8 A. That's what the words say.
9 Q. Yeah. Do you have any reason to believe that what
10 would be in this report would be inaccurate?
11 A. No.
12 Q. Okay. So as of 2000 would this language in this
13 report indicate there was a narrative criteria
14 violation associated with nutrients?
15 A. No.
16 Q. Now, let's -- let's -- and by the way, Fred Short
17 said the same thing. He didn't think that the bay
18 was impaired in 2000. Running to page 28, and
19 again I'll apologize for the lack of page numbers
20 at the bottom. I'll just read you a statement
21 about -- it's on eelgrass.
22 A. Okay.
23 Q. It says, "In the late '80s eelgrass wasting

1 condition of the bay in 2000.
2 Q. Okay. That's fine. Okay. Well, let's look at
3 the next one. I'm going to show you the 2003
4 State of the Estuaries report. This was
5 Exhibit 17 from the Fred Short deposition. And
6 it's on page --
7 A. This has better page numbers.
8 Q. Let's go to page 8. And it talks about -- the
9 title is, "Indicator no. 3. Have nitrogen
10 concentrations in Great Bay changed significantly
11 over time?" All right. Then there's a little
12 graph that shows nitrate and nitrite at Adams
13 Point, and it shows a line snaking through some
14 bouncing data. You're on that page, right?
15 A. Yes.
16 Q. I'd like to draw your attention to the statement
17 on the left-hand side of the graph. "Despite the
18 increase in concentration of nitrate/nitrite in
19 the estuary, there have not been significant
20 trends for the typical indicators of
21 eutrophication, dissolved oxygen and chlorophyll-a
22 concentrations; therefore, the load of
23 nitrate/nitrite to the bay appears to have not yet

1 disease caused dramatic eelgrass declines in Great
2 Bay Estuary arousing great concern into the early
3 '90s; however, historic eelgrass" -- let me state
4 it again. "However, historical eelgrass beds have
5 made an impressive recovery of acreage and
6 densities." Then I'll skip a sentence. "While
7 the overall resource is improving, lost eelgrass
8 beds in Little Bay have been significantly slower
9 to recover."
10 So at this point in time the understanding is
11 eelgrass in Great Bay looked pretty good in 2000.
12 That's when this is. This is the 2000 State of
13 the Estuaries report. Would that be a fair
14 statement?
15 A. Yes. I believe those words say it had been a
16 substantial recovery from the wasting disease
17 episode.
18 Q. And I won't hold you to Fred Short's quote, but
19 Fred Short indicated that in 2000 he didn't
20 believe the bay was adversely impacted for
21 eelgrass. Is that your understanding of the
22 condition of the bay in 2000?
23 A. To be honest with you, I have not considered the

1 reached a level at which undesirable effects of
2 eutrophication occur."
3 Okay. Based on that statement is there any
4 indication that the state's narrative criteria for
5 nutrients is violated, violated as of the 2003
6 estuaries report?
7 A. No. The statement speaks for itself.
8 Q. Okay. And now I'd like to bring your attention to
9 page 16. Again, it talks about eelgrass, and it
10 has a nice chart showing eelgrass. That's the
11 very next page. There you go. It's indicator no.
12 7. And I think the data run up through 2001. And
13 this was another one that we asked Fred Short
14 about as to whether or not these data indicated
15 any kind of eelgrass impairments in -- we're
16 talking in Great Bay. We're not talking anywhere
17 else in the estuary, just in Great Bay.
18 A. Right.
19 Q. And there's a statement in the middle of, I think
20 it's the second paragraph. "Eelgrass cover in
21 Great Bay has been relatively constant for the
22 past 10 years at approximately 2,000 acres," and
23 then again talks about the major decline in 1989

1 wasting disease.
2 Based on this information, is there any
3 indication that eelgrass was suffering impairment
4 in Great Bay as of 2001?
5 A. I believe, again, the words speak for themselves.
6 "Eelgrass cover in Great Bay has been relatively
7 constant over the last 10 years."
8 Q. So whatever nitrogen or whatever nutrients are
9 entering the bay, at least at this point they
10 don't appear to be causing excessive algal growth
11 and they don't appear to be affecting the eelgrass
12 growth, do they?
13 A. That's right.
14 Q. That's what Fred Short said also, so you're in
15 good company. Let's go to --
16 MR. HALL: Tupper, do you have a copy of
17 the 2006? For some reason --
18 MR. KINDER: Yeah.
19 MR. HALL: -- I don't have an extra copy of
20 the 2006.
21 Q. Okay. I'd like to bring your attention to pages
22 12 and 13. Do you have page numbers at the
23 bottom?

1 A. Not specifically.
2 Q. Are the hydrodynamics of Great Bay significantly
3 different than Chesapeake Bay, to your knowledge?
4 A. Yes.
5 Q. Much shorter detention time?
6 A. Fairly short detention time, yes.
7 Q. What about Narragansett Bay? Is Great Bay just
8 like Narragansett Bay, or is it significantly
9 different?
10 A. I think it's safe to say all estuaries are unique
11 in their hydrodynamics.
12 Q. But this one has a particularly short residence
13 time given its nature and the tidal exchange,
14 doesn't it?
15 A. Yes, it does.
16 Q. And that affects the ability for nutrients to
17 cause excessive plant growth?
18 A. It is certainly a factor.
19 Q. Thank you for that clarification. See, you know,
20 you may have retired, you know, a year ago, but
21 you've still got it, so...
22 Okay. The next -- the next sentence. "So
23 far" -- and this is similar, I guess, to the last

1 A. Yeah. They're good.
2 Q. Okay. Good. All right. On page 12 -- and this
3 is another one -- one more time they're asking
4 "What are the nitrogen concentrations doing in
5 Great Bay?" I mean, that's a focus and it's
6 always a concern to track that, to make sure it's
7 not causing an adverse effect, correct? That's
8 what we're trying to do with this report?
9 A. Yes. Track things over time using a consistent
10 set of indicators.
11 Q. Okay. I'd like to bring your attention to the
12 right-hand column first on page 12. It starts,
13 "The researchers are still debating the possible
14 effects of increasing DIN concentrations on Great
15 Bay because it is a unique system, both
16 hydrodynamically and biologically, that may
17 respond differently to excess nitrogen than other
18 estuaries."
19 Let me ask you a question about that
20 statement. Do you know what they're talking
21 about, how Great Bay may be responding differently
22 from other estuaries? Do you know what the
23 background is on that?

1 two reports we looked at. "So far the typical
2 effects of nitrogen have not been observed in
3 Great Bay, although DIN concentrations are similar
4 to concentrations in other estuaries where
5 negative effects have been clearly observed."
6 Okay. Does that statement indicate that
7 there's any violation of the narrative criteria,
8 excessive plant growth being caused by nitrogen
9 discharges to the bay?
10 A. No.
11 Q. Okay. Now, let's look at the next page because
12 the next page is interesting because it's got two
13 graphs of dissolved inorganic nitrogen. It's
14 called Figure 6. This is all at Adams Point.
15 Where is Adams Point?
16 A. It's roughly in the middle of the bay.
17 Q. Okay. And is this a typical indicator location
18 that the department uses to assess the health of
19 the bay?
20 A. Yes. My understanding is it was a point selected
21 by UNH researchers a long time ago, so it has a
22 lot of data.
23 Q. Ah. So somebody that knows more than us about

1 where they should collect data on the bay?
2 A. Yes.
3 Q. All right. So there's two charts. One is
4 dissolved inorganic nitrogen, the other one is
5 suspended solids concentrations. The inorganic
6 nitrogen looks like it's gone up over time, I
7 mean, if you compare the 1980s to this time frame
8 of 1997 to 2004; correct?
9 A. (Deponent nodded.)
10 Q. Okay. So that's gone up. Apparently, it hasn't
11 caused a change in chlorophyll-a growth, though,
12 right, based on the statements on the prior page?
13 A. Right.
14 Q. Correct. But the suspended solids have jumped
15 from -- I'll just pick a rough average -- say, 6
16 milligrams per liter in the 1980 time frame to,
17 say, 15 milligrams per liter in the period of 1999
18 to 2004.
19 A. Yes.
20 Q. So the suspended solids have gone up. So what,
21 what would have caused the change in suspended
22 solids, caused the suspended solids to go up, but
23 not the chlorophyll to go up; do you know?

1 A. I don't know.
2 Q. Do you know if anybody ever figured that out for
3 Great Bay?
4 A. I know it was the subject of lots of conversation.
5 Q. Okay. But that wasn't, that wasn't caused by a
6 change in algal growth, right?
7 A. One component of suspended solids is algae.
8 Q. But, I mean, the increase wasn't caused by change
9 in algal growth?
10 A. The increase in?
11 Q. Suspended solids.
12 A. Well, this plot does not, does not detail that.
13 Q. I can show you another one that does.
14 A. I'm sure you can.
15 Q. So you can answer the question, if you recall,
16 from whether or not the suspended -- whether or
17 not in Great Bay the suspended solids did
18 increase, but the data showed the chlorophyll-a
19 levels remained pretty constant; is that your
20 recollection?
21 A. I don't recall the details but --
22 Q. Okay. But that could have been the case?
23 A. I'll take your word for it.

1 Q. I'll show you a graph later so you don't have to
2 take my word for it. Okay. So as of this point
3 in time Great Bay looks like it's not being, not
4 being considered nutrient impaired, but let's --
5 let's go to page 20 on this same, this same
6 report, if you could, please.
7 MR. SERELL: What's the number of that
8 exhibit?
9 MR. HALL: That was Short Exhibit --
10 MR. KINDER: Seventeen, I think.
11 MR. SERELL: Seventeen?
12 MR. KINDER: I'm sorry. Eighteen.
13 MR. HALL: I think you might have it marked
14 at the top of yours.
15 MR. KINDER: That's 18.
16 MR. SERELL: Just for the record.
17 A. Eighteen, yeah.
18 Q. Let's look at page 20 and 21. I'm sorry. I'll
19 make you flip over to the next page. You can see
20 the typical eelgrass chart?
21 A. Yeah.
22 Q. You've seen that eelgrass chart before --
23 A. Yes.

1 Q. -- or charts like that, right?
2 A. Yes.
3 Q. Okay. And looking at the language on the prior
4 page, because it's talking about Figure 17,
5 eelgrass cover and biomass in Great Bay. It says,
6 on the left-hand column, "The current 2004 extent
7 of eelgrass in Great Bay is 2,008 acres, which is
8 17 percent less than the maximum observed in
9 1996."
10 Do you know whether or not DES considered a
11 2000-acre coverage of eelgrass to be an impaired
12 level of eelgrass in Great Bay or unimpaired level
13 of eelgrass?
14 A. A couple of, a couple of things.
15 Q. Please.
16 A. DES doesn't consider Great Bay -- or in the
17 process, which is outlined in the CALM again,
18 Great Bay is not considered as a whole in making
19 an assessment like that. And the second answer is
20 that aerial coverage of eelgrass is not, would not
21 be the only consideration that would be used.
22 Q. Okay. What other consideration would there be?
23 A. I would refer you to the CALM.

1 Q. Ah. Do you know if there was a CALM written in
2 2004 that indicated whether or not this level of
3 eelgrass coverage was considered an impairment?
4 A. I'm pretty sure there wasn't because the guidance
5 document wasn't produced till 2009.
6 Q. Okay. So the 2009 guidance document, the numeric
7 nutrient criteria -- when you say, "Guidance
8 document," you mean the numeric nutrient document,
9 right?
10 A. Yes.
11 Q. Okay. So that document eventually became the
12 basis for deciding whether or not something was
13 impaired?
14 A. Yes. And that's further described in the CALM.
15 Q. But that was a numeric nutrient criteria document.
16 That didn't necessarily say what the amount of
17 eelgrass in the bay needed to be, how many acres
18 would be considered a healthy amount of eelgrass
19 in the bay, did it?
20 A. No, no. Nor was that judgment ever made.
21 Q. Hmm.
22 A. To my knowledge.
23 Q. I'd like to draw your attention to the language at

1 the top of the second paragraph on the right-hand
2 side on page 20. It's discussing that the
3 eelgrass -- first it discusses the eelgrass are
4 bouncing around in terms of acreage. And I'll
5 read the quote. "The specific cause of the
6 decline in eelgrass cover and biomass is unclear,
7 but it appears to be related to the reduction in
8 the amount of light reaching the plants." I'll
9 skip a line. "The observed changes in eelgrass
10 cannot be linked directly to a water quality trend
11 in Great Bay, although increasing concentrations
12 in suspended solids have been observed at Adams
13 Point."
14 So at this point in time the change in
15 eelgrass levels, I guess people don't, don't know
16 what's causing it, correct?
17 A. Yes. That coincides with my memory of the
18 discussions in -- this is 2006?
19 Q. Yeah.
20 A. Yeah. 2006.
21 Q. It's 2006. But the only trend that's mentioned
22 here is suspended solids. It doesn't mention that
23 there's any increased phytoplankton growth causing

1 a transparency impact, does it?
2 A. No. The words that we've talked about don't.
3 Q. I'd like -- let me see. I'm going to show you one
4 more of these. Ah, let's mark this as Exhibit 30.
5 This is a State of the Estuaries report in 2009.
6 Ah, let me just ask you one last question.
7 So as of the 2006 State of the Estuaries
8 report, just so I make sure I have your
9 recollection correct, you're not sure whether or
10 not Great Bay was considered impaired for eelgrass
11 loss at that time yet?
12 A. I'm sure it wasn't because the criteria had not
13 been developed on which to make that judgment.
14 Q. Thank you. I didn't remember what you had said
15 three minutes before, yeah, so maybe I should
16 retire. Let's look at page 13.
17 MR. LUCIC: Why don't we have it marked.
18 Is it marked already?
19 (Reporter responds.)
20 MR. LUCIC: So why don't we --
21 MR. HALL: Oh, yeah. Why don't we mark --
22 MR. LUCIC: Since we identified it, let's
23 mark it.

1 MR. HALL: Since we identified it, let's
2 mark it. Thank you.
3 (Exhibit 30 marked.)
4 Q. (BY MR. HALL) I'd like to draw your attention to
5 page 13. And I had asked you a question earlier.
6 There were three charts on that page, one is
7 dissolved inorganic nitrogen, the other one is
8 suspended solids, and the other one is
9 chlorophyll-a. I had asked you whether or not you
10 had any recollection as to whether or not the
11 chlorophyll-a level had changed over time and when
12 that -- and if so, when that change might have
13 occurred. And there's a Figure 10 at the bottom.
14 And looking at the data -- actually, let me back
15 up for a second. Who's the person that develops
16 these figures?
17 A. This would be Phil Trowbridge, coastal scientist,
18 is the primary author for -- not all of them we
19 talked about, but certainly for this one.
20 Q. So if we have a bone to pick about any figures, we
21 have to go to Phil?
22 A. Yes. And I would say since the report was a
23 collaborative effort, he's not the sole author.

1 Q. Okay. Looking at Figure 10, the one that says
2 chlorophyll-a concentration measured at Adams
3 Point, does that, does that figure show that there
4 was any material change in chlorophyll-a
5 concentration between 1981 and 2000?
6 A. I would give you my visual impression from the
7 graph, recognizing I think that the graph
8 incorporates lots of data. Yes.
9 Q. Yes, that chlorophyll-a significantly changed, or
10 it didn't change up until 2000?
11 A. That there is -- I'm sorry. I lost your question.
12 Q. I think -- I think you answered yes to a negative
13 question, and I asked a positive. Let me rephrase
14 it. Does this graph show any significant change
15 in chlorophyll-a from the 1981 time frame to the
16 1993-2000 time frame?
17 A. It doesn't appear to, no.
18 Q. No. And then after 2001 there is somewhat of an
19 increase in chlorophyll-a, isn't there?
20 A. Yes.
21 Q. Can you tell me about how much that looks like?
22 A. Well, just reading off the graph, the mean
23 concentration, '93-2000 period is maybe three and

1 Q. I mean, it's really not much of a change in
2 chlorophyll-a, is it?
3 A. I don't know.
4 Q. Okay. Let's look at the -- do you remember that
5 earlier question about the inorganic nutrient
6 levels had gone up but the chlorophyll hadn't
7 changed? Let's look at that top graph. That
8 shows -- and I'm talking about Figure 8. That
9 shows the inorganic nitrogen went from -- I'll
10 just rough it out -- .1 to, say, .15 milligrams
11 per liter in the system between 197 -- 1980 and
12 the 1990-2000 time frame. But at the same time
13 frame the chlorophyll-a in the system -- down
14 below -- didn't change in response to that,
15 correct?
16 A. I don't believe that you can draw that conclusion
17 from these graphs; that is, I have no idea
18 whether, whether the response, that the
19 chlorophyll-a response here is related to the
20 nitrogen based on the graph.
21 Q. Well, how would you determine, if you didn't use a
22 graph, to plot the data and see if one went up and
23 the other one didn't go up, there isn't a cause

1 a half, and in the 2001 to 2008 time period it's
2 maybe four and a half.
3 Q. So it went up about a microgram?
4 A. (Deponent nodded.)
5 Q. Okay. Do you have any idea of the, how much of an
6 impact on transparency a single microgram change
7 in chlorophyll-a would be?
8 A. No, I don't.
9 Q. Who would know that at DES?
10 A. Well, Phil would be the person to, to whom I could
11 ask the question.
12 Q. Okay. Has anybody ever told you that a change in
13 one microgram of chlorophyll-a is a significant
14 change in algal growth in a system?
15 A. I haven't considered that issue, I don't think.
16 Q. In any other system, fresh water, salt water,
17 anywhere in the state, has the state ever said
18 before that a one-microgram change is a, would
19 constitute cultural eutrophication in a system, do
20 you know, historically?
21 A. Yeah. Not to my knowledge.
22 Q. Not to your knowledge.
23 A. I never heard it framed that way, actually.

1 and effect between the two?
2 MR. MULHOLLAND: Objection. I think you're
3 getting into some expert testimony. He said he
4 doesn't understand any connection between the two.
5 He's not your expert.
6 Q. Ah. Well, let me back up. Is that graph
7 consistent with the earlier statements that were
8 contained in the State of the Estuaries reports
9 that we walked through where it said the inorganic
10 nitrogen increased, but I'm not seeing the
11 response in algal growth in the system?
12 A. Yes, it is.
13 Q. Okay. All right. Let's just leave that one
14 marked as -- what was that?
15 (Reporter responds.)
16 MR. HALL: Thirty?
17 MR. LUCIC: Yeah.
18 A. Yeah.
19 Q. A side question. Move away from --
20 (Discussion off the record.)
21 Q. Macroalgae, are you familiar with the term
22 macroalgae? M-a-c-r-o-a-l-g-a-e.
23 A. Yes, I am.

1 Q. Can you tell me what they are?
2 A. Seaweed.
3 Q. That's a fair definition. Can you tell me when
4 you recall first hearing that macroalgae growth in
5 Great Bay might be a problem?
6 A. Not long after Phil Trowbridge came to work for
7 us. I don't recall the specific date.
8 Q. By the way, do you know when Phil came to work for
9 you?
10 A. I don't. I think it was around 2005, but I'm not
11 sure.
12 Q. Okay. I mean, because we looked through some of
13 these prior State of the Estuaries reports and I
14 didn't see the words macroalgae, I mean, literally
15 appear anywhere in the reports. If macroalgae
16 were a problem in the system, do you think it
17 would have been reported in those State of the
18 Estuary reports?
19 A. Yes.
20 Q. Okay.
21 A. If it had been identified as well.
22 Q. Okay. But people were out there looking. I mean,
23 Fred Short was out there looking at the bay and

1 Q. I'm going to show you a couple of reports done by
2 Phil Trowbridge for the TAC committee. And can
3 you look at that document? It's entitled, "New
4 Hampshire Estuaries Project Environmental
5 Indicators. Phil Trowbridge. June 15, 2006." Do
6 you recall that presentation? And this was a
7 presentation Phil did to the TAC committee.
8 A. I don't recall it specifically, but yes, I --
9 Q. Okay.
10 A. -- would have, I would have been present at this
11 presentation.
12 Q. Right. Yeah. We have the TAC meeting minutes and
13 I think you were, you were in attendance at most
14 all of them. I'd like to bring your attention
15 to -- so this is, this is Phil evaluating,
16 evaluating some of the indicators of the
17 pollutants in the system. And let's look at
18 page -- oh, let's look at the third page, the
19 nitrogen trends page. Is Phil's analysis
20 indicating that nitrogen has increased up through,
21 from the 1980s through the 1990-2004 period?
22 A. Well --
23 Q. You can go to the next chart also.

1 swimming around and inspecting eelgrass every
2 year, right?
3 A. Yes.
4 Q. Do you recall whether Fred Short ever said the
5 bay, when Fred Short might have said the bay has a
6 significant macroalgae problem?
7 A. No. But I never talked to Fred Short about that.
8 Q. Okay. Phil Trowbridge might have?
9 A. It would be Phil. He might have.
10 Q. Thank you. Okay. Let's go back to the TAC
11 committee, because this one report talks about
12 there was a -- I guess the 2006 State of the
13 Estuaries report talks about eelgrass populations
14 are changing. They're not sure what the cause is.
15 Was the TAC committee to your knowledge tasked
16 with trying to evaluate what the cause of the
17 changing eelgrass populations might be?
18 A. Not specifically. But they were, they did agree
19 to take on the task of developing numeric nutrient
20 criteria as a subcommittee of the water quality
21 standards advisory committee, and I don't remember
22 exactly when they agreed to do that. It was in
23 that time frame somewhere.

1 A. It's the past 25 years on that page.
2 Q. Right. His charts of dissolved inorganic nitrogen
3 and --
4 A. Yes. There's a significant increase.
5 Q. So it's the same type of thing that was discussed
6 in the State of the Estuaries reports, right?
7 A. Yeah.
8 Q. It also shows a significant increase in suspended
9 solids level too, right? It's the same
10 observation?
11 A. Yes.
12 Q. And now let's go, let's go to the next set of
13 charts, or the next page where he talks about "Any
14 increase in nitrogen concentration has apparently
15 not resulted in increased phytoplankton blooms."
16 I don't see the -- the data was plotted on the
17 next page. So Phil then charts the chlorophyll-a
18 levels at Adams Point and compares 1981 to the
19 time frame up through 2004 and reaches this
20 conclusion.
21 Is that consistent with your understanding
22 that up through 2004 the increased nitrogen
23 concentrations were apparently not causing

1 significant change in phytoplankton blooms in the
2 bay?
3 A. Yes. That was -- as of June 15, 2006 that was --
4 Q. Now --
5 A. -- the understanding.
6 Q. Okay. So up and through -- because his data is
7 only plotted through 2004.
8 A. Right.
9 Q. So up at least to 2004, if I looked at this data,
10 would I conclude that I've got a narrative
11 criteria violation caused by nitrogen and
12 phosphorus related to chlorophyll-a growth, or
13 that I don't have a narrative criteria violation
14 related to chlorophyll-a growth?
15 A. The conclusion I think would be that there's no
16 violation.
17 Q. And I think that would be a fair statement. Let's
18 see if there's anything else in this.
19 MR. HALL: Let's just mark that as
20 Exhibit 31.
21 (Exhibit 31 marked.)
22 Q. Let me just ask you one other question regarding
23 that exhibit, Mr. Currier. Is there -- can you

1 in the Piscataqua River ever reported to your
2 knowledge?
3 A. No, not to my knowledge.
4 Q. Now, let's go to the next analysis that was done
5 by Mr. Trowbridge, and it's called, "Summary of
6 Light Availability and Light Attenuation Factors
7 in Great Bay," dated February 14, 2007. Mr.
8 Currier, are you familiar with this report?
9 A. Not in detail, but I'm sure I was at the time.
10 Q. Okay. Well, do you know why this report was
11 developed?
12 A. I believe it was part of the continuing process to
13 develop nutrient criteria for the estuary.
14 Q. And I could walk you through the Technical
15 Advisory Committee notes if we need to refresh
16 your recollection, but let me just make a few
17 statements and see whether or not you're in
18 general reliance on your recollection.
19 Part of the TAC assignment was to try to
20 determine what was changing the eelgrass levels in
21 the system, correct?
22 A. Yes. My recollection is that there was
23 substantial discussion leading to the

1 just flip through it quickly and can you give me
2 an idea as to whether or not you're seeing any
3 references to excessive macroalgae growth in this
4 analysis?
5 MR. MULHOLLAND: Do you want him to read
6 the whole thing?
7 Q. No. Just flip through it. I think the words
8 macroalgae don't appear anywhere in the entire
9 document.
10 A. I'll take your word for it.
11 Q. If increased nitrogen did not cause an increased
12 algal growth in Great Bay, would it likely have
13 caused any increased algal growth in the
14 Piscataqua River, do you know?
15 A. Say it --
16 Q. If this report indicates -- because it's only
17 looking at Adams Point, right --
18 A. Right.
19 Q. -- that for Great Bay we didn't have increased
20 algal growth. But let's switch to the Piscataqua
21 River, because the Great Bay flows eventually to
22 the Piscataqua River. Do you know if there were
23 any indications of excessive phytoplankton growth

1 identification of eelgrass as the end point to be,
2 to be selected.
3 Q. And one of the major factors that they wanted to
4 look at was transparency, light penetration,
5 correct?
6 A. Yes.
7 Q. Because people understood light penetration can
8 affect eelgrass growth?
9 A. Yes.
10 Q. As a result of looking at light penetration, then
11 one needed to look at the different factors that
12 could affect light penetration, correct?
13 A. Yes.
14 Q. And those factors could include -- I'll just list
15 several of them. You may have a few more.
16 Colored dissolved organic matter would be one,
17 correct?
18 A. Yes.
19 Q. Phytoplankton or chlorophyll-a level would be
20 another?
21 A. Yes. Although --
22 Q. Organic and other inorganic suspended solids would
23 be another?

1 A. Yes.
2 Q. I guess they said the water itself has an effect
3 on light transmission too --
4 A. Right.
5 Q. -- to a degree too. So it's those kind of factors
6 that one would need to look at to find out what's
7 causing a change in transparency if a change in
8 transparency is occurring, correct?
9 A. Yes.
10 Q. Okay. And the Trowbridge analysis that you have
11 in front of you, I mean, TAC indicated that these
12 were things that needed to be evaluated, and
13 Mr. Trowbridge with Professor Short proceeded to
14 evaluate; is that your recollection of the events
15 at that time?
16 A. Yes. Yeah. Fred Short was part of the Technical
17 Advisory Committee.
18 Q. Right.
19 A. He had a significant role because of his expertise
20 in eelgrass.
21 Q. And just to be clear on the record, when I asked
22 Fred about this, because the Technical Advisory
23 Committee notes which are -- where are the TAC

1 notes? They were -- oh, they were Short
2 Exhibit 24.
3 MR. KINDER: Yeah.
4 Q. Fred and Phil were assigned to do this, but Fred
5 said, "Well, they didn't give me research dollars
6 to do it so I couldn't put any time" --
7 A. I think I remember that.
8 Q. There you go. See, you know, it's those little
9 statements everybody always remembers. You know,
10 "If you'll give me some money, I'll do it." Okay.
11 So let's, let's look at this document. Look
12 at page 3 where it talks about "Factors
13 influencing light attenuation." Those are the
14 same several factors you and I just talked about,
15 correct?
16 A. Yes.
17 Q. And then Phil Trowbridge analyzes -- oh, he looks
18 at chlorophyll-a trends, and then he looks at
19 suspended solids trends, then he looks at
20 turbidity trends, then he looks at where colored
21 dissolved organic matter is coming from. I mean,
22 we can -- you can flip through. And then he does
23 univariate regressions of these things. If you

1 flip through and just, you know, refresh your
2 recollection on that report. And then I'd like to
3 bring your attention to page 9, which is, you
4 know, he reaches some initial conclusions on this.
5 So he's saying, "Colored dissolved organic
6 matter account for 50 percent of the light
7 attenuation in Great Bay." Is that your
8 recollection of which factor had the greatest
9 impact on light attenuation in the system?
10 A. Well, it's my recollection that that statement is
11 correct.
12 Q. That's correct. So -- and the next statement,
13 "Light attenuation by CDOM," which is colored
14 dissolved organic matter, "is a more complicated
15 process than increased nitrogen increases
16 phytoplankton increases shading," right? That's
17 what it says.
18 A. Right.
19 Q. Is -- where does colored dissolved organic matter
20 come from in these systems?
21 A. From, my understanding is from plant growth in the
22 system. That is --
23 Q. You mean in the watershed?

1 A. In the watershed, yes.
2 Q. In the watershed. It's kind of like leaching out
3 of decaying leaves and other plant growth,
4 correct?
5 A. Right.
6 Q. Okay. And every time the flows in the system go
7 up or, in other words, more fresh water comes down
8 the system, more colored dissolved organic matter
9 comes down into the system, correct?
10 A. Yes.
11 Q. Okay. How would regulating nitrogen at a
12 wastewater plant control the colored dissolved
13 organic matter coming into the system?
14 A. It would not.
15 Q. It would not. Okay. Let's go to the last page.
16 Well, actually, let me back up before we go to the
17 last page. Transparency. Everybody is focusing
18 on transparency at this point as a possible
19 explanation for why you do or don't have eelgrass
20 in various locations, correct? That's what the
21 main focus is?
22 A. Uh-hum.
23 Q. Did you ever see any data for Great Bay or any of

1 the tidal rivers that showed transparency had
2 changed over time in the system, amount of light
3 penetration had changed?
4 A. I don't recall. My recollection is there was a
5 scarcity of data.
6 Q. All right. The one thing that's discussed in this
7 report is that Phil Trowbridge is saying,
8 transparency predicts where the eelgrass are going
9 to grow or not grow. Do you recall that being
10 evaluated by Phil?
11 A. Yes.
12 Q. So if transparency is predicting where the
13 eelgrass will grow, does that mean that the
14 nitrogen level is controlling what the
15 transparency is, or does that require yet another
16 piece of analysis to make?
17 A. It requires further analysis.
18 Q. For the tidal rivers -- and when I, when I want to
19 say tidal rivers, let me be really clear because
20 there's a lot of tidal rivers in Great Bay. Let's
21 say the Squamscott and the Lamprey. They have
22 more fresh water in them as tidal rivers than
23 Great Bay has as a percentage of the water in the

1 system, correct?
2 A. Yes.
3 Q. Okay. Would the impact of the colored dissolved
4 organic matter be greater in those tidal rivers
5 than it would be in Great Bay?
6 MR. MULHOLLAND: Objection.
7 Q. To your knowledge.
8 MR. MULHOLLAND: It's an unclear question.
9 There's no predicate of the impact. Impact on
10 what?
11 Q. Impact on -- thank you. The impact on
12 transparency, the water clarity. Colored
13 dissolved organic matter would have a greater
14 impact on the water clarity in those tidal rivers,
15 correct?
16 A. The answer is I need further information to be
17 able to make any evaluation. And the reason is
18 that the amount of colored dissolved organic
19 matter being, coming, associated with the fresh
20 water is watershed-specific.
21 Q. Okay. Well, if the colored dissolved organic
22 matter levels are significantly higher in the
23 Lamprey and Squamscott River, the transparency in

1 those rivers is going to be poorer than Great Bay,
2 correct?
3 A. To the -- yes. CDOM is part of the, of the light
4 attenuation --
5 Q. Okay.
6 A. -- factors.
7 Q. At this point in Mr. Trowbridge's analysis does
8 this evaluation anywhere indicate that -- and I'd
9 like you to just flip through the report from one
10 end to the other, that the chlorophyll-a level or
11 the algal level in Great Bay is having a
12 significant impact on the transparency in the
13 system?
14 A. It's hard to evaluate things by flipping. Looking
15 at the observation page, page 17, my
16 understanding, and based on my recollection as
17 well, is that the purpose of this presentation was
18 to evaluate transparency as a predictor of
19 eelgrass.
20 Q. But, I mean, it's also evaluating the components
21 of what may be affecting transparency.
22 A. Yes.
23 Q. I mean, it's not just -- I mean, first is where

1 the eelgrass are present or absent, does
2 transparency seem to explain that? That was
3 question no. 1, right?
4 A. Yes.
5 Q. Question no. 2 was: And what explains the
6 transparency levels that we're finding at these
7 different locations?
8 A. Yes.
9 Q. And the conclusion was colored dissolved organic
10 matter accounts for 50 percent of the transparency
11 that's occurring in these, at least in Great Bay?
12 A. Yes.
13 Q. Okay. And in the tidal rivers if the colored
14 dissolved organic matter were higher than Great
15 Bay, then one would think that would have had an
16 even greater impact on transparency in those
17 areas, correct?
18 A. Yes.
19 Q. Okay. And then in the -- let's take the
20 Piscataqua River south of Great Bay. Does this
21 analysis tell me anything about what's controlling
22 the transparency levels in that area?
23 A. This analysis does not deal at all with the

1 Piscataqua River.
2 Q. So we don't know whether or not it's a
3 chlorophyll-a transparency issue, a colored
4 dissolved organic transparency issue, or a just
5 turbulent mixing suspended solids transparency
6 issue in that area, do we?
7 A. That's right. As we talked about before, the
8 systems are unique and the Piscataqua River is a
9 substantially different system hydrodynamically
10 than the bay itself.
11 Q. But -- and at this point in time -- let me go back
12 to my question on change in transparency, what may
13 have caused a change in transparency over time,
14 assuming a change happened over time.
15 If the chlorophyll-a levels did not change
16 significantly over time, that would not have
17 caused -- therefore, it would not have caused the
18 change in transparency due to chlorophyll-a,
19 correct?
20 A. Yes.
21 Q. Okay. And does this analysis indicate on page 4
22 that the chlorophyll-a trend changed significantly
23 over time or didn't change significantly over

1 whether or not the topics that were discussed here
2 that you had any familiarity with or input on.
3 Now, it's a -- I'd like to go all the way to the
4 bottom.
5 MR. MULHOLLAND: Paul, feel free to read
6 the whole thing, if you want.
7 Q. I've really only got a couple of minor questions
8 on this. It says, "As I said at the meeting," and
9 I imagine it was some meeting between Fred Short,
10 Phil Trowbridge and maybe Phil Colarusso and Jen
11 -- who are Phil Colarusso and Jim Latimer and
12 Jennifer Hunter? Do you know who they are?
13 A. Jennifer at that time was the executive director
14 of the estuaries project. Phil Colarusso is an
15 EPA employee, and Jim Latimer is EPA Narragansett
16 Laboratory.
17 Q. Okay. So it looks like the parties were
18 discussing what's going on with the nitrogen, but
19 I'll just bring your attention to the bottom. "As
20 I said at the meeting, because of the intertidal
21 nature of Great Bay it has the ability to support
22 eelgrass (despite the worst water quality in the
23 estuary) as plants get adequate light at low

1 time? And I'll draw your attention to the
2 chlorophyll-a trends at Adams Point chart, which
3 has a 1974 to '81 at a certain level, and a 1997
4 to 2004 level.
5 A. Right. And the caption reads, "No apparent
6 change." Right?
7 Q. Oh, you're right. It does read, "No apparent
8 change."
9 A. I would agree with that based on my visual
10 observation.
11 Q. Okay. Well, thank you.
12 MR. HALL: That is marked as exhibit what?
13 (Reporter responds.)
14 MR. HALL: Could you please mark it as
15 Exhibit 32?
16 (Exhibit 32 marked.)
17 Q. This whole issue of transparency and where it's
18 important and what's affecting eelgrass growth
19 apparently is being looked at pretty carefully,
20 and I'd like to show you an e-mail. It's an
21 e-mail entitled, "Nitrogen criteria," Fred Short
22 to Phil Trowbridge, dated January 17, 2008.
23 You're not a recipient of this, but I'm wondering

1 tide."
2 This issue of eelgrass getting adequate light
3 at low tide despite the transparency level
4 currently there, do you recall discussions on
5 that?
6 A. I don't recall these, but yes, I do recall
7 discussions.
8 Q. Do you recall what the conclusion of that
9 discussion, those discussions were? Do the
10 eelgrass get adequate light at low tide to support
11 their growth?
12 A. Well, I believe the discussions were that the,
13 that is a factor in eelgrass existence and growth
14 in Great Bay is that it, in fact, it's shallow
15 enough so eelgrass floats at low tides.
16 Q. So is that different than, say, the Piscataqua
17 River where the, it maybe doesn't get as shallow
18 where the eelgrass are growing?
19 A. Yes.
20 Q. So Great Bay would be treated for that factor
21 differently than, say, the Piscataqua River, or
22 should be?
23 A. Yes.

1 Q. Okay. Okay. Now here's a point of confusion on
2 my part. If Fred Short, the eelgrass expert, is
3 saying plants get adequate light at low tide, why
4 are we developing a nutrient criteria for
5 transparency in Great Bay if they get adequate
6 light at low tide?

7 A. Again, my recollection is that the question that
8 we were batting around was: Why does eelgrass
9 exist at all in Great Bay, given the transparency
10 conditions? And the thought was, at the time is
11 that the shallowness of the bay and the low-tide
12 situation were a factor in the existence of
13 eelgrass. And that -- that would make the
14 transparency all the more critical because it's,
15 it's light over time that, that eelgrass requires
16 to grow. And light over time is a, integrates
17 both the low-tide and the high-tide conditions.

18 Q. But apparently whatever light it gets is adequate
19 at low tide. That's what Dr. -- is there anybody
20 that's ever -- to your knowledge, is there anybody
21 that's ever given a technical opinion on eelgrass
22 for Great Bay that concludes the existing
23 transparency level in Great Bay is insufficient to

1 asked that question. He answered it.

2 Q. If you can answer the question.

3 A. Again, I'll give you my, my simplified conceptual
4 model.

5 Q. Please.

6 A. And that is that eelgrass requires light
7 integrated over time. And the conclusion was that
8 eelgrass has declined in several areas of Great
9 Bay, and that that can be related to the light
10 situation. And that the light situation can be
11 related -- the change in the light situation over
12 time -- and that that can be related to change in
13 nitrogen.

14 Q. Okay.

15 A. I'm not sure that DES in our guidance document, I
16 don't believe that we concurred with Fred Short's
17 conclusion that the low-tide situation was,
18 provided adequate light for eelgrass growth.

19 Q. Okay. We looked at some State of the Estuaries
20 reports, right? And we looked at some eelgrass
21 charts in those State of the Estuaries reports,
22 correct?

23 A. Yes.

1 support eelgrass growth? Have you ever seen that
2 expert opinion from Fred Short?

3 A. That's -- the conclusion of the 2000 guidance
4 document is that the existing transparency level
5 is insufficient to support eelgrass growth and,
6 therefore, through a series of analysis, there
7 should be limits on nitrogen.

8 Q. All right. Well, Paul, I'm not trying to give you
9 a hard time, but if -- I know what the 2009
10 document says. What I'm reading, and suffice it
11 to say that Fred Short has got a half dozen of
12 these same exact statements that he's made in
13 phone logs to EPA, I mean, I suspect he's made
14 this statement to everybody. He made it to Tom
15 Gallagher at the meeting. "The light transmission
16 in Great Bay is fine. They get enough light at
17 low tide."

18 What I'm wondering is if the eelgrass expert
19 for Great Bay keeps saying plants get adequate
20 light at low tide and the eelgrass are there and
21 growing, what was the technical basis for
22 concluding that that position was incorrect?

23 MR. MULHOLLAND: Objection. You already

1 Q. And up through the time period, I'll pick 2000 to
2 2004, the eelgrass populations were considered
3 healthy in those reports, correct?

4 A. Yes.

5 Q. Okay. So the eelgrass were healthy during that
6 time frame. Whatever transparency was occurring
7 in Great Bay was sufficient to maintain healthy
8 eelgrass, correct?

9 A. Yes.

10 Q. Okay. Do you know of any information that shows
11 transparency changed significantly after 2004 in
12 Great Bay such that it caused a decline in
13 eelgrass?

14 A. No. But I'm pretty sure that that was not the
15 question that was examined --

16 Q. Okay.

17 A. -- in making determinations about the biological
18 integrity of the bay relative to water quality
19 standards.

20 Q. Let me ask it a different way, then. Whatever
21 transparency level existed in Great Bay from 2000
22 to 2004, that was a sufficient transparency level
23 to allow eelgrass growth, correct?

1 A. Yes.
2 Q. Okay. So if I were looking at the narrative
3 criteria and -- by the way, is there, is there any
4 way I could look at this narrative criteria and
5 know I should be controlling a transparency level
6 based on this narrative criteria?
7 A. No, not on the face of it.
8 Q. Yeah. That's kind of why you developed a numeric
9 water quality criteria, right?
10 A. Yes.
11 Q. So in terms of narrative criteria compliance, the
12 transparency level that was present in the bay --
13 I'll pick my range again -- 2000 to 2004 for Great
14 Bay, not talking about anywhere else in the
15 system, but that that transparency level would be
16 considered compliant with the narrative criteria
17 for Great Bay, right?
18 A. Yes.
19 Q. Okay.
20 A. Yes. Now, I may be wrong, but I don't believe
21 that this part of the standards is the part that
22 was applied in the listing of Great Bay.
23 Q. Well, there were different parts that would apply.

1 There was a biological impairment part.
2 A. Right.
3 Q. And, I mean --
4 A. That's my recollection.
5 Q. -- the one -- let's make sure you and I get our
6 jargon correct on this one. You can determine
7 something is biologically impaired without
8 determining what the cause of it was, right?
9 A. That's correct.
10 Q. And the transparency numbers that came out were
11 kind of determined to be the cause of the
12 biological impairment eventually?
13 A. Yes, yes.
14 Q. Right. And what I was trying to ask a question on
15 is -- okay. If it was the cause of the
16 impairment, a fair thing to do would be for me to
17 compare, for example, the transparency level
18 present in 2000 to 2004 with maybe a transparency
19 level present in 2008 and see whether or not it
20 had changed significantly; and if it had --
21 A. Yes.
22 Q. -- then it would be fair to say that could have
23 been the cause of the eelgrass decline?

1 A. Yes.
2 Q. If it hadn't changed, then it wouldn't be fair to
3 say that that was the cause of the eelgrass
4 decline, right?
5 A. Yes.
6 Q. I'm going to -- did we mark that one yet as
7 Exhibit --
8 MR. LUCIC: I don't believe so.
9 MR. HALL: What are we up to,
10 thirty-something?
11 MR. LUCIC: Thirty-three, I believe.
12 MR. HALL: Thirty-three.
13 (Exhibit 33 marked.)
14 Q. Before I go to the question on numeric criteria,
15 we're looking at an analysis that Phil Trowbridge
16 did previously in -- oh, heck, what was -- it was
17 in the middle of -- it was June of -- February of
18 2007. All right. In February of 2007
19 Mr. Trowbridge looks at these various factors
20 affecting light availability and impacts on Great
21 Bay and doesn't really see an algal connection,
22 chlorophyll-a connection to causing the impact.
23 We covered that before. I think you pointed out

1 the "no apparent change" quote at the top.
2 Can you please tell me whether anybody showed
3 you any new information from the time frame that
4 Phil Trowbridge did that analysis to the time
5 frame when the numeric criteria came out that
6 showed that the nitrogen had actually caused a
7 significant change in plant growth and then that
8 caused a change in the transparency level? Do you
9 recall any data that showed that?
10 A. I would have to refer you to the 2009 guidance
11 document and the data behind that. There was -- I
12 can -- I am sure that there was a very substantial
13 amount of analysis done between February 2007 when
14 this was written and the, and when the guidance
15 document was finalized.
16 Q. Let me just ask you your recollection. Do you
17 recall anybody coming into your office and saying,
18 "Paul, look at the chlorophyll-a level in 2004 and
19 it quadrupled by the time 2008 occurred and look
20 at how significantly that affected light
21 transmission in the system"? Do you ever recall
22 anybody coming into your office and showing you an
23 analysis like that?

1 A. I do not. But I do recall a number of discussions
2 concerning the dependency of eelgrass on light
3 transmission and being certain that eelgrass
4 depends on light transmission for its existence.
5 Q. Does that mean nitrogen caused it?
6 A. No.
7 Q. Do you recall that a Dr. Morrison did a detailed
8 study of light transmission in Great Bay under a
9 federal research project?
10 A. Yes.
11 Q. Okay. That was a prior exhibit in Dr. Short's
12 deposition. I'll just -- I can either show you
13 the report or I could just ask you your basic
14 recollection. Do you recall whether or not that
15 report reached any different, significantly
16 different conclusions on the causes, on the
17 factors affecting light transmission in Great Bay
18 than Mr. Trowbridge reached in his conclusions in
19 that 2007 analysis?
20 A. I don't believe it did, but my recollection is
21 that Dr. Morrison's report went into more detail
22 about the partitioning of the, of the effects on
23 light transmission.

1 Q. All right. And I'm going to just show you the
2 report just to make sure we're both talking about
3 the same report. It's --
4 A. Do you want to put a number on this?
5 Q. It was Short Exhibit No. 25. Is that the same
6 report, that Dr. Morrison report we were just
7 talking about?
8 A. I believe so, yes. I recognize the figures.
9 Q. Yeah.
10 A. That I recall, yes.
11 Q. Okay. And do you recall whether or not DES
12 developed any information that showed the results
13 of Dr. Morrison's analysis were in error?
14 A. No.
15 Q. Okay.
16 A. No. I recall there being some issues with the
17 hyper-spectral data but they didn't, they didn't
18 result in invalidating the report.
19 Q. Okay. Thank you. Where was I? I'm going to show
20 you a -- can we take a five-minute break? Do you
21 mind?
22 A. Sure.
23 MR. MULHOLLAND: Let's go.

1 (Recess taken; 10:43-10:49 a.m.)
2 Q. Mr. Currier, do you recall that after those
3 initial analyses were done by Mr. Trowbridge and
4 then the subsequent analysis was done by Dr.
5 Morrison on the factors affecting transparency,
6 that Phil Trowbridge completed further analyses
7 indicating that nitrogen was, in fact, the cause
8 of changes in transparency?
9 A. Well, all of that is memorialized in the 2009
10 guidance document.
11 Q. I'm talking about documentation that was presented
12 to the Technical Advisory Committee. Do you
13 recall him presenting graphs to the Technical
14 Advisory Committee on, well, basically similar
15 to -- this is Short Exhibit 26. Similar to that
16 chart?
17 A. Yes, I do.
18 Q. And --
19 A. Well, I recall this chart and it was presented in
20 various forms.
21 Q. Okay. And that chart purports to indicate that
22 the nitrogen is what's causing changes in
23 transparency in the system, doesn't it?

1 A. It shows a relationship between, what is it,
2 median total nitrogen in various parts of the bay
3 and median light attenuation coefficients in
4 various parts of the bay.
5 Q. That's a regression, correct?
6 A. Yes.
7 Q. Does that analysis prove causation?
8 A. No, it does not.
9 Q. And that was Short Exhibit 26 we were referring
10 to. By the way, just as a side note, and I don't
11 want to walk you through all the Technical
12 Advisory Committee notes because that's a tour of
13 history you don't necessarily want to have to talk
14 about. But the Technical Advisory Committee had
15 reached the same conclusion that these kind of
16 analyses don't show causation; they just show a
17 correlation. Do you recall the Technical Advisory
18 Committee making that observation? Just --
19 A. No.
20 Q. You don't recall it. Okay. So I have to show you
21 the meeting minutes if I wanted to refresh your
22 recollection.
23 A. But I would, I would, I would believe that.

1 Q. Okay. Because it's a true statement?
2 A. Right.
3 Q. Right. Can I show you a document that I just
4 received today? So I'm as new at looking at this
5 as you are.
6 MR. KINDER: Can I just make a
7 representation that Evan provided us with this
8 document that's about to be shown to Paul this
9 morning. And as I understand it, it's part of the
10 production that the state is continuing to give to
11 us in response to requests for production.
12 MR. MULHOLLAND: That is in response to the
13 document subpoena for Ted Diers.
14 MR. KINDER: Oh, okay.
15 Q. This is apparently an e-mail exchange. You're
16 included in the second e-mail below from Gregg
17 Comstock. Who is Gregg Comstock?
18 A. He was the water quality planning section
19 supervisor. He worked directly for me.
20 Q. He worked for you?
21 A. And Phil worked for him.
22 Q. Okay. It says, "Hi all. Al Basile just called.
23 To avoid a potential lawsuit with CLF EPA has

1 the state list Great Bay as nutrient impaired?
2 A. I don't remember the details, but yes, for the --
3 this would have been the 2008 list. The ultimate
4 result was listing for, for multiple assessment
5 units in the Great Bay Estuary.
6 Q. Okay.
7 MR. HALL: Let's just mark that as
8 Exhibit 34.
9 MR. MULHOLLAND: John, do you want to mark
10 the e-mail or --
11 MR. HALL: The whole package.
12 MR. MULHOLLAND: Okay.
13 (Exhibit 34 marked.)
14 Q. Mr. Currier, you indicated that this analysis of
15 light attenuation versus total nitrogen at trend
16 stations, that this analysis doesn't prove
17 causation, correct?
18 A. Yes.
19 Q. Okay. So is this analysis sufficient in your mind
20 to determine that nitrogen is causing a violation
21 of the narrative standard in that it doesn't
22 demonstrate causation?
23 A. It's not sufficient, no.

1 decided that Great Bay should be listed for
2 nitrogen."
3 Do you recall this e-mail?
4 A. Not specifically, no. I recall conversations with
5 EPA around the listing issue.
6 Q. And that CLF was threatening a lawsuit unless you
7 took a specific action to list Great Bay as
8 nutrient impaired?
9 A. I recall a significant desire by CLF that Great
10 Bay, certain -- that certain assessment units in
11 Great Bay be listed, yes.
12 Q. At this point in time I take it the department had
13 not considered Great Bay to be nutrient impaired?
14 A. We had not assessed Great Bay for nutrients prior
15 to that time.
16 Q. Not assessed for nutrients, what does that mean?
17 A. Again, referring to the CALM. The CALM details
18 how we, how we do assessments. And we had not,
19 because the nutrient criteria were in the process
20 of development, the procedures for making those
21 assessments for the estuary had not been
22 developed.
23 Q. Okay. And subsequent to this e-mail coming in did

1 Q. Okay. Thank you for that clarification.
2 A. Necessary, perhaps.
3 Q. Actually -- no. I won't ask any further questions
4 on that. We need to move on to some other topics
5 because there's more to cover.
6 I'd like to show you an e-mail that -- it
7 came from USEPA and it was comments on the -- it
8 was a comment document on a draft numeric
9 criteria. And it's an exchange again with Al
10 Basile back and forth to Phil Trowbridge. You're
11 copied on it, so is Gregg Comstock, and commenting
12 on the draft report. I'd like to draw your
13 attention to the last sentence of the end of the
14 first page. It says, "We strongly encourage you
15 to work as expeditiously as possible to ensure
16 that the criteria are finalized and ultimately
17 adopted as water quality standards."
18 I think we covered this earlier. That was
19 consistent with your understanding as to the, what
20 the state was going to do; they were going to
21 finalize the draft criteria and then adopt them
22 into water quality standards?
23 A. Yes.

1 Q. You have other numeric water quality standards
2 already adopted in state law, right?
3 A. Yes.
4 Q. Do you have any numeric water quality standards
5 that you -- to your knowledge are there other
6 numeric water quality criteria that the state has
7 and utilizes in the permitting or impairment
8 listing process that are not adopted into your
9 water quality standards?
10 A. Yes.
11 Q. Okay. What are they?
12 A. Well, I can give you an example.
13 Q. Please.
14 A. For rivers and streams we use indices of
15 biological integrity which are based on the
16 multi-metric indices.
17 Q. Okay.
18 A. And they're numeric.
19 Q. Do those indices control a specific pollutant
20 level?
21 A. No, they do not.
22 Q. Are there any specific pollutant level criteria,
23 numeric criteria that you utilize for the 303(d)

1 process or the permitting process that are not
2 adopted into your water quality standards to your
3 knowledge?
4 A. I would have to review the CALM. Not that I
5 would -- not that I recall right off the top. You
6 can find that information in the CALM.
7 MR. HALL: Let's mark that as Exhibit 35.
8 (Exhibit 35 marked.)
9 Q. This is a copy of a transmittal letter for --
10 actually, let me back up for a second before we go
11 into the transmittal letter on the numeric
12 criteria. The June 2009 numeric criteria
13 document, that's -- do you recognize that as the
14 numeric criteria that the department developed?
15 A. Yes. It certainly looks like it.
16 Q. That was -- that was Short Exhibit No. --
17 MR. KINDER: Twenty-seven.
18 Q. -- 27. Okay. Can you please tell me what numeric
19 values were established via that document?
20 A. I would have to refer you to the document.
21 Q. Let me --
22 A. I can find it.
23 Q. Let's do it easier. Do you recall whether or not

1 that document established a specific numeric
2 criteria for nitrogen?
3 A. Yes, it does.
4 Q. Did it do that both for dissolved oxygen and for
5 light transmission?
6 MR. MULHOLLAND: Objection. Attorney Hall,
7 there's a page in there that summarizes the
8 numbers. I think it might be more helpful than
9 trying to rely on his memory just to be accurate.
10 There's a lot of numbers in there.
11 MR. HALL: Oh, yeah. I'm not going to --
12 Evan, I'm not going to ask him about the specific
13 numbers. I'm just going to ask him what numbers
14 were set forth, what values were, had specific
15 numeric criteria.
16 Q. So we have a specific numeric criteria for
17 nitrogen, correct?
18 A. (Deponent nodded.)
19 Q. And we have a specific -- and that nitrogen
20 criteria set both for protecting DO, correct, and
21 eelgrass? Separate criteria?
22 A. Right.
23 Q. Okay.

1 A. And DO has a numeric standard, a separate numeric
2 standard.
3 Q. Right. Then we had a separate chlorophyll-a
4 standard set for DO purposes also, correct?
5 A. I'll take your word for it. I don't remember.
6 Q. There was a separate standard set for
7 transparency, correct?
8 A. Yes, yes.
9 Q. Looking at the narrative standard that the state
10 had published, I imagine many, many years ago, is
11 there any way I could look at that standard and
12 know that those specific numeric values were
13 necessary to ensure compliance with this criteria?
14 A. And you're talking about the standard --
15 Q. New Hampshire -- New Hampshire Narrative Standard.
16 A. No. Again, you would have to, you would have to
17 go to the CALM document which is, which explains
18 how the standards, the adopted rules are applied
19 in specific situations.
20 Q. Okay. With regard to the numeric values for
21 nitrogen and transparency, light penetration that
22 were adopted, or that were established in the 2009
23 document, do you recall whether or not any

1 conclusion had been reached that it was necessary
2 to apply those criteria also in the Lamprey and
3 Squamscott River to protect eelgrass?

4 A. I recall discussions about whether, for specific
5 assessment units about whether eelgrass was the
6 end point to be protected.

7 Q. Okay. And do you recall whether or not a
8 determination was made that it was necessary to
9 apply those values in the tidal rivers, in those
10 tidal rivers to ensure eelgrass restoration?

11 A. I don't recall specifically, but I do recall -- I
12 recall the conversations. I don't recall the
13 result. But you will find that in the, in the
14 305(b) report.

15 Q. If light transmission -- if light -- let me
16 rephrase this.

17 If transparency in the Squamscott and Lamprey
18 Rivers was inadequate to allow eelgrass to grow,
19 regardless of the nitrogen or chlorophyll-a level
20 present, would application of those criteria be
21 appropriate in that situation anyway?

22 A. Let me think about that. If transparency was
23 inadequate for eelgrass growth?

1 is not the most significant one as we talked
2 about.

3 Q. Regarding that 2009 document also, there were
4 several individual studies done for the tidal
5 rivers, the Squamscott and Lamprey, on dissolved
6 oxygen. There was a study by Pennock. Do you
7 recall that one?

8 A. Yes.

9 Q. And there was a study by Dr. Jones on the
10 Squamscott. Pennock I believe did the Lamprey.

11 A. Lamprey. I think so, yes.

12 Q. Neither of those studies -- do you recall if
13 either of those studies showed that chlorophyll-a
14 or algal growth was the cause of low DO
15 periodically occurring in either the Squamscott or
16 Lamprey?

17 A. I don't recall what their conclusions were.

18 Q. All right. If those two studies indicated that
19 the cause of low DO was not excessive algal growth
20 in either the Lamprey or Squamscott, would it be
21 appropriate to apply the nitrogen DO-based
22 criteria from that document in the Squamscott and
23 Lamprey River?

1 Q. Eelgrass growth, regardless of the nitrogen level.

2 A. And we had determined that eelgrass was the
3 appropriate biological end point to be protected,
4 and we determined that nitrogen was not a factor,
5 then applying the nitrogen criteria developed here
6 would not be appropriate.

7 Q. Okay. If the transparency level in the Squamscott
8 and Lamprey River were naturally low because of
9 colored dissolved organic matter and turbidity in
10 those systems, would that transparency level be
11 considered a violation of your state standards?

12 A. No. I should add that if the transparency were
13 naturally low and insufficient for eelgrass
14 propagation, the eelgrass would not be there. And
15 I don't know whether it -- what the history is, I
16 don't remember, but I'm sure of that.

17 Q. With regard to the development of the 2009
18 criteria, do you know if, has anybody ever shown
19 you an analysis that confirms chlorophyll-a is a
20 major component influencing transparency anywhere
21 in the Great Bay system?

22 A. I don't recall, but chlorophyll-a is always a
23 component and my recollection is that in general

1 A. No, it wouldn't.

2 Q. Okay. This document, the 2009 document says it's
3 using a weight-of-evidence analysis. I think
4 those words appear in there. Do you know if
5 there's anywhere in state regulations that defined
6 what weight of evidence means?

7 A. Not to my knowledge.

8 Q. Is there a guidance document that describes what
9 weight of evidence means?

10 A. Not specifically that I know of. I know that it
11 is, it is a term that is used in EPA publications.

12 Q. Have you ever seen a federal criteria document for
13 developing numeric criteria that explains this is
14 how a weight-of-evidence analysis is conducted?
15 Have you ever seen that?

16 A. No, not that I recall.

17 Q. What does weight of evidence mean?

18 A. Weight of evidence, again, my understanding, means
19 that one particular line of reasoning is not
20 relied on entirely to reach a conclusion about
21 whether or not the water quality standards are
22 violated. It's several lines of reasoning are
23 taken together and considered in order to make a

1 decision.
2 Q. Under a weight-of-evidence analysis if you've got
3 specific information on, say, Great Bay, let's
4 take that as an example, that shows nitrogen did
5 not cause a chlorophyll-a change in Great Bay, and
6 therefore, it did not impact transparency or cause
7 a transparency change, if you have that specific
8 information for Great Bay, do you use generalized
9 information for a weight-of-evidence analysis to
10 conclude the opposite occurred in the system?
11 A. Proving a negative is very difficult. I would
12 suggest to you that that specific information does
13 not exist.
14 Q. Well, didn't we -- I'm just saying, assuming that
15 you have data that shows the chlorophyll-a levels
16 did not change in the system, would you use a
17 weight-of-evidence analysis to reach a conclusion
18 that you have to regulate nutrients anyway under
19 the theory that it did cause a change in the
20 system?
21 A. No. You could not use -- if there were no change
22 in chlorophyll-a levels during a period of time in
23 which eelgrass did change, you could reach the

1 system, now, would it?
2 A. No. The data would drive the weight of evidence.
3 Q. So the data should drive the weight of evidence
4 determination?
5 A. Yes.
6 Q. Thank you. That's -- that's what I was hoping
7 should be the case.
8 A. And I trust that that is what has been
9 consistently done in the CALM.
10 Q. I won't ask a question on that. All right. We
11 covered -- we covered that the department had had
12 an understanding that it needed to adopt these
13 numeric criteria into standards and the department
14 made that statement or acknowledgment on several
15 occasions, correct?
16 A. Yes. I made that statement on several occasions.
17 Q. Okay. I mean, there's more e-mails that say so,
18 so it's not like that it's a state secret or
19 something like that. Do you recall -- do you know
20 whether or not federal, federal water quality
21 standard rules require states to adopt numeric
22 values into state law before using them in a
23 regulatory process?

1 conclusion that chlorophyll-a is not a causative
2 factor. That is one way in which you can use
3 statistical analyses. You can use statistical
4 analyses to rule things out.
5 Q. I guess the point I'm getting at with weight of
6 evidence is you don't use weight of evidence to
7 trump site-specific information that is showing
8 something is not actually occurring, right?
9 A. Actually, my understanding is that weight, the
10 weight-of-evidence approach is always used in a
11 site-specific context; that is, you want to apply
12 several lines of reasoning in this case to a
13 particular assessment unit relative to the
14 question of whether water quality standards are
15 met for a particular designated use. It's always
16 site-specific.
17 Q. All right. Well, okay. That's good. Because, I
18 mean, I understand that you could have a theory
19 that nitrogen can grow chlorophyll-a and then that
20 can adversely impact transparency. That's a
21 sequence of events that might occur. So, but
22 weight of evidence wouldn't be used to trump data
23 that showed it didn't actually occur in the

1 MR. MULHOLLAND: Objection. That calls for
2 a legal conclusion he's not qualified to give.
3 You're asking a legal question.
4 MR. HALL: I'm asking what his knowledge of
5 the applicable regulations are for the program
6 that he manages.
7 Q. So if you can answer the question, do you know if
8 the federal regulations require the state to
9 formally adopt their numeric nutrient standards
10 before they are applied in a regulatory context?
11 A. I don't believe they do.
12 Q. You don't believe they do. Okay. These numeric
13 criteria, can you tell me how they, how they were
14 subsequently used in a regulatory context?
15 A. Yes. Again, I can refer you to the CALM. That is
16 how they were used in the regulatory context.
17 Q. Were they used to identify which waters were
18 considered impaired for nitrogen and transparency
19 and DO in the Great Bay Estuary?
20 A. Yes.
21 Q. Okay. Were they used to do calculations as to
22 what the necessary effluent limitations needed to
23 be to ensure compliance with the numeric values?

1 A. No.
2 Q. No?
3 A. The process for assessment is completely separate
4 from the permitting process.
5 Q. Ah. Did DES conduct analyses that were designed
6 to identify the allowable discharges of nitrogen
7 from the wastewater plants in order to ensure
8 compliance with the standards?
9 A. There was several published -- or not published --
10 by DES, analyses which examine various scenarios
11 for discharge relative to compliance in various
12 parts of the bay with these standards, yes. I
13 believe, I believe it's -- it was -- I don't know
14 what it's called now. At one time it was called
15 the wasteload allocation.
16 Q. So the short answer to my question is yes, that
17 DES did take these numeric criteria and perform a
18 series of calculations to determine what were the
19 necessary effluent limitations to ensure the
20 compliance?
21 A. We ran multiple scenarios as to assist both the
22 municipalities and EPA in the, in future permit
23 processes.

1 Q. Okay. So the purpose of the analyses was to
2 identify potential effluent limitations with the
3 facilities? One purpose.
4 A. Yes.
5 Q. Okay. And that analysis was provided to EPA?
6 A. Yes, and to the municipalities.
7 Q. Do you know at what point in time the
8 municipalities were given an opportunity to
9 formally object to or challenge the conclusions on
10 the necessary numeric values that were contained
11 in the June 2009 document?
12 A. I can tell you the municipalities fully
13 participated in the management committee process
14 and all had the opportunity to fully participate
15 in the Technical Advisory Committee process from
16 its inception.
17 Q. But that wasn't my question. My question is: Can
18 you tell me at what point in time the communities
19 had an opportunity to formally object as to the
20 development and application of these values to
21 determine impairment listings and potential
22 effluent limitations, to object to the state's use
23 of these and development of them?

1 A. That would -- well, the CALM is made available for
2 public comment before, before each listing cycle.
3 Q. Is the CALM a regulation?
4 A. No.
5 Q. Okay. So how do I -- if I don't like what you've
6 done in the CALM, where do I go to object to this?
7 MR. MULHOLLAND: Objection. That's a legal
8 question. He answered it already.
9 Q. Do you know -- do you know if there's a right to
10 appeal the CALM?
11 MR. MULHOLLAND: Objection. That's also a
12 legal question.
13 MR. KINDER: No. It isn't a
14 legal question.
15 MR. MULHOLLAND: It's exactly a legal
16 question.
17 MR. HALL: He runs the program, so...
18 MR. KINDER: What's his understanding?
19 MR. MULHOLLAND: You can ask me what my
20 understanding was and I would tell him. That's a
21 legal question.
22 MR. KINDER: Well, what's his
23 understanding?

1 MR. MULHOLLAND: He can answer if he wants.
2 A. Certainly opportunity. We solicit comments on the
3 CALM and we solicit comments via various
4 mechanisms. And the intent and the desire is that
5 the details of the CALM receive the broadest
6 scrutiny as possible before the CALM is used for
7 assessments.
8 Q. I'd like to show you some -- before that 2009
9 document was developed, would Great Bay have been
10 classified as impaired, Great Bay or any part of
11 the Great Bay Estuary been classified as impaired
12 for transparency?
13 A. I don't believe so.
14 Q. What about for nitrogen causing adverse impacts on
15 transparency?
16 A. No.
17 Q. What about chlorophyll-a causing DO violations?
18 A. No.
19 MR. SERELL: We need to get oral answers to
20 those. I can't hear him.
21 A. Oh, no.
22 MR. HALL: He's been saying no.
23 A. I've been saying it quietly.

1 MR. SERELL: I'm sorry.
2 MR. HALL: They were quiet noises.
3 Q. So based on the 2009 document, the division felt
4 it was appropriate to utilize those values to make
5 impairment determinations?
6 A. Yes.
7 Q. Okay. Once those impairment determinations were
8 made, can you tell me what regulatory processes
9 would be triggered? Like do you have to do a TMDL
10 for the system?
11 A. Well, as a requirement, no. As a -- but certainly
12 the NPDES permit process, the limits in permits
13 are substantially driven by water quality
14 standards as they apply to specific assessment
15 units, which is, which is what these nutrient
16 criteria do.
17 Q. So those nutrient criteria would be used in the
18 permitting process; that was one of their
19 purposes?
20 A. They would be used by EPA in drafting permits,
21 yes.
22 Q. Is EPA free to ignore those nutrient criteria once
23 they've been developed and used to establish

1 applicable to the Exeter facility?
2 A. To be honest with you, I'm out of touch by a year
3 so I don't know whether that permit has been
4 drafted or not.
5 Q. Oh, I thought Exeter came out during --
6 A. Maybe it did. Maybe it did. This is --
7 Q. I'm pretty sure it did.
8 A. Certainly a draft on the street.
9 Q. So you saw draft permits that utilize these
10 numeric nutrient criteria values as the basis for
11 calculating effluent limitations?
12 A. Yes.
13 Q. Did you tell EPA that was inappropriate to do
14 that?
15 A. No.
16 Q. Did you tell EPA it was appropriate to do it?
17 A. I don't recall doing either one.
18 Q. We might have some e-mails that might say that.
19 A. Probably.
20 Q. Probably do. Right. In your opinion would you
21 say that the 2009 document defined, changed, or
22 established, established a level of protection to
23 be applied for nutrient water quality attainment

1 impairment listings?
2 A. My understanding is EPA can do anything they want
3 to in permits.
4 Q. I'm saying from a regulatory context. You've been
5 managing this program for a long time. You use
6 those specific nutrient values to establish this
7 is the level of water quality that constitutes an
8 impairment. If you're worse than this, does EPA
9 have any discretion to ignore that when issuing
10 the permits for the facilities that discharge to
11 the system?
12 A. I believe EPA's obligation is to use all, all
13 available information in writing permits, and they
14 would, in fact, use these.
15 Q. They would have to use it, in fact, wouldn't they?
16 A. I believe so.
17 Q. Right.
18 A. Yeah.
19 Q. Okay. That's a correct answer. They would have
20 to use it.
21 Do you know whether or not EPA, in fact, did
22 use these values as a basis for calculating more
23 restrictive effluent limitations possibly

1 decisions?
2 A. Yes.
3 Q. Did the 2009 document define, change, or establish
4 the magnitude or concentration of allowable
5 pollutant levels in the system?
6 A. Yes.
7 Q. Did it define the, establish or change the
8 allowable duration of those pollutant
9 concentrations in the system?
10 A. I believe so.
11 Q. Did it --
12 A. It was an annual mean.
13 Q. It was an annual mean. By the way, on that point,
14 do you know if --
15 A. Or a median maybe.
16 Q. A median.
17 A. Yeah.
18 Q. Yeah. Do you know if the state ever told EPA it
19 was appropriate to apply an annual mean nutrient
20 criteria under seven-day once-in-ten-year low-flow
21 conditions to calculate permit limits?
22 A. I don't recall specific discussions on that.
23 Q. Is an annual mean nutrient concentration, does

1 that duration of exposure, annual mean, have
2 anything to do with a seven-day once-in-ten-year
3 low-flow condition?
4 A. I'm sure there's a connection, but it would not be
5 one that would be straightforward.
6 Q. Well, if it was an annual mean, shouldn't it be
7 applied under some type of annual mean condition?
8 A. Yes.
9 Q. Okay. That's what I was getting at.
10 A. Yes, yes.
11 Q. Thank you.
12 A. And that would -- I agree. That would need to be
13 factored in.
14 Q. In terms of those nutrient criteria and other
15 transparency and chlorophyll-a values, what
16 frequency of compliance was established by that
17 2009 document? Is it annual mean once in ten
18 years, once in five years, once in three years; do
19 you know?
20 A. In general the frequency of compliance for water
21 quality standards is all the time. That, however,
22 is not practical.
23 Q. Okay.

1 A. If you ask EPA, I believe that's the answer you
2 will get.
3 Q. This document itself used multiyear long-term
4 averages to calculate these values, correct?
5 A. That's right.
6 Q. So if you used multi-year long-term averages to
7 calculate the allowable value, would it be
8 appropriate scientifically to apply it as a "not
9 to exceed at any time"?
10 A. Purely opinion, probably not.
11 Q. I mean, the two analysis periods wouldn't be
12 consistent --
13 A. Yes.
14 Q. -- with each other, would they?
15 A. That's correct.
16 Q. For the water bodies that this was designed to
17 apply to, I mean, this, the June 2009 numeric
18 criteria designed to apply to, the impairment
19 classifications changed after this document came
20 out as a result of the numbers in this document,
21 correct?
22 A. Right.
23 Q. Okay. Do you know if the pollutant levels in

1 those water bodies had changed before and after
2 this document had come out?
3 A. I believe the change was from unassessed to
4 assessed with a determination as to whether or not
5 water quality standards were met relative to
6 specific designated uses.
7 Q. But the actual pollutant levels that were
8 occurring before and after this document hadn't
9 changed; it was just the document got applied to
10 those pollutant levels?
11 A. That's correct.
12 Q. And this document has yet to be proposed for
13 rulemaking by the state, correct, to your
14 knowledge?
15 A. This document wouldn't be, is not appropriate for
16 rulemaking.
17 Q. Would the numeric criteria generated by that
18 document be appropriate for rulemaking?
19 A. Yes.
20 Q. That document merely -- that document explains how
21 the numeric criteria are calculated, correct?
22 A. Yes.
23 Q. So that document produced the numeric criteria,

1 correct?
2 A. Yes.
3 Q. If I were looking at the narrative, the statement
4 of New Hampshire narrative criteria, is there any
5 way I could look at this statement and know that
6 those were the specific numeric values that needed
7 to be attained as to have such concentrations that
8 would not impair designated uses?
9 A. No. That's the reason why we write a CALM.
10 Q. It's also the reason why you generate a numeric
11 nutrient value, right?
12 A. Right.
13 Q. In terms of specific changes that happened before
14 and after the issuance of the document, is it your
15 recollection that eelgrass impairments in Great
16 Bay were originally identified as unknown in the
17 department's 2008 impairment assessment?
18 A. I don't recall.
19 Q. I'd like to show you, this is a cover letter that
20 you used to transmit I believe the 2000 --
21 actually, it was to transmit the 2009 updated
22 numeric -- I'm sorry -- the 2009 updated
23 impairment listings to EPA. It's a letter dated

1 August 14, 2009 to Al Basile. Do you recall
2 sending this letter to EPA?
3 A. Yes.
4 Q. Okay. And can you tell me who Al Basile is?
5 A. He's basically the person that deals with New
6 Hampshire relative to water quality standards and
7 the 305(b) report and the 303(d) list.
8 Q. The impairment listings and the water quality
9 standards person?
10 A. Right. He's our main point of contact.
11 Q. And there's a statement in the middle paragraph,
12 second paragraph, "DES identified these
13 impairments using the numeric nutrient criteria
14 that DES published for Great Bay Estuary in
15 June 2009 and updated eelgrass cover assessments
16 that reflect the new data from 2006 to 2008." Is
17 that a correct statement of how the revised
18 impairment listing was done?
19 A. Yes.
20 Q. Okay. And that's consistent with the discussion
21 we just had?
22 A. Right.
23 MR. HALL: Let's just mark that as

1 Exhibit 36.
2 (Exhibit 36 marked.)
3 Q. And if I can bring your attention to the
4 attachment, if you could just hand it back,
5 there's attached a Table 1 that has a, various
6 assessments and impact zones and it has a column
7 that says, "New impairments"?
8 A. Yes.
9 Q. So the column that says, "New impairments," these
10 were all the new impaired waters and causes of the
11 impairments that were added to your impaired
12 waters list as a result of the 2009 numeric
13 criteria document?
14 A. Yes.
15 Q. I'd like to show you -- I don't have any further
16 questions on that one. I'd like to show you
17 another e-mail, and it's another Al Basile -- and
18 we marked that last exhibit, right?
19 (Reporter responds.)
20 Q. Okay. And basically your e-mail is the last one
21 in the string. It starts at the bottom. It says,
22 "Here is -- hi, all. Here is a letter of
23 requested provisions to the 303(d) list." And

1 there's some discussion about EPA looking at the
2 letter. Al Basile is looking at the letter and
3 Ann Williams is making a comment on it. It says,
4 "I've only glanced at it briefly," so it's the
5 letter that we just --
6 A. That's Ann's comment, yeah.
7 Q. So the prior exhibit that we just talked about.
8 "One thing that caught my attention was Paul's
9 reference in the cover letter to numeric nutrient
10 criteria that DES published in 2009. Because this
11 criteria have not been adopted into the water
12 quality standards submitted to EPA for review and
13 approval, it's important to make clear that these
14 are not formal criteria, rather are based on DES's
15 interpretation and application of existing
16 narrative criteria."
17 Do you recall having discussion with EPA that
18 you needed to characterize, that the state needed
19 to characterize its numeric nutrient criteria as a
20 narrative criteria interpretation if you wanted to
21 use it?
22 A. Yes. I believe the word was translator.
23 Q. And do you recall why they told you that? Or,

1 actually, let me back up. Who suggested to the
2 state that it was a good idea to call a numeric
3 nutrient criteria a narrative translator?
4 A. I believe that first showed up in our -- we have a
5 document that is a plan for adoption of nutrient
6 criteria by water body type, and I believe it
7 showed up in there. That was -- that was how we
8 proposed to do it.
9 Q. Okay.
10 A. And I don't remember the date on that document,
11 but it might have been 2004, the first one.
12 Q. Okay. In terms of differences in regulatory
13 effect, what's the difference in regulatory impact
14 between calling those numeric nutrient criteria
15 versus calling them a narrative criteria
16 translator?
17 A. The one that I'm most aware of is bound to the
18 Clean Water Act. The process for water quality
19 standards provides that, for EPA to approve them,
20 and once they are approved they become enforceable
21 as federal regulation, and a translator because
22 it's not adopted by, under the state rulemaking or
23 statutory process is not directly federally

1 enforceable as federal rule.
2 Q. Okay. Let me reword the question. Actually, who
3 told you that was true?
4 A. I'm not sure, but Ann Williams may have.
5 Q. So EPA is the one that came up with the idea of
6 calling this a narrative criteria translator so it
7 could be used immediately in the 303(d) process to
8 generate impairment listings?
9 A. This is -- again, this is my understanding based
10 on written EPA guidance, which is nationwide, is
11 that in our conversations with the Region One
12 folks is that this was an acceptable way from
13 EPA's point of view for us to move in the
14 direction of adopting nutrient criteria.
15 Q. Okay. Now, let's change -- put yourself in the
16 position of the regulated community, so you're
17 sitting in my seat, or you're sitting in Exeter's
18 seat. Whether or not you call that a narrative
19 criteria translator or you call it a numeric
20 nutrient criteria, does that change whether or not
21 you declare the water body impaired by nutrients
22 based on the information in that document?
23 A. No.

1 Q. Does that change how they calculate whether or not
2 the existing loadings of nitrogen or phosphorus
3 are acceptable to the water body depending upon
4 how you call that, what you call that document?
5 A. No.
6 Q. So in terms of regulatory effect on the
7 regulatory, the impact on the regulatory
8 community, calling it a narrative translator
9 versus a numeric criteria has no change in
10 regulatory impact. It only has a change in
11 whether or not you believe you need to publish it
12 as a new water quality standard; is that your
13 understanding?
14 A. Yes. Although I would argue that a translator
15 actually provides greater flexibility in its
16 application in the regulatory context, because the
17 evidence can be provided that would allow for a
18 change in a translator without going through the
19 rulemaking process.
20 Q. So long as the translator were not being applied
21 as if it were a strict numeric criteria, correct?
22 A. My understanding is two things. The agency is
23 obligated to use the best information available in

1 all -- this is EPA, it's not -- all the
2 information we can get our hands on in order to
3 make listings, in order to determine impairment
4 status, and then EPA, who is the permit writer for
5 New Hampshire, is obligated to use all the
6 information available to it in order to write
7 permits.
8 Q. All right. So let me --
9 A. And that's true independent of whether something
10 is a rule or not.
11 Q. Okay. So let me just give you a quick example.
12 Suppose I had data on the Squamscott River that
13 showed that the chlorophyll-a level had little or
14 nothing to do with the level of transparency
15 present in that river. All right. Then that
16 numeric translator should not be applied in the
17 Squamscott River for transparency, should it?
18 A. That's right.
19 Q. Okay. If this was considered a numeric criteria
20 and I presented that same information, would that
21 information change the numeric criteria?
22 A. Repeat that again. I'm not sure.
23 Q. If this were being applied as a numeric nutrient

1 criteria --
2 A. As a rule?
3 Q. As a rule, would that same information be
4 considered to justify nonapplication of the
5 numeric nutrient criteria, or would I have to
6 change the numeric nutrient criteria?
7 A. You'd have to change the criteria. Yes, you'd
8 have to change the criteria.
9 Q. You'd have to change it.
10 MR. HALL: Can we mark that as Exhibit 37?
11 (Exhibit 37 marked.)
12 Q. As a result of that numeric nutrient criteria
13 document, whether implemented as a narrative
14 translator or a formal numeric nutrient criteria,
15 does that document trigger the need to reduce
16 loads of nitrogen going into the water bodies that
17 were now identified as impaired due to nitrogen in
18 the Great Bay Estuary?
19 A. Yes.
20 Q. Thank you. And would that document, would that
21 document and the impairment listings based on it
22 normally trigger a TMDL process to ensure that
23 both point and nonpoint source loads can be

1 reduced going into the system?
2 A. Yes.
3 Q. And when would these -- would more restrictive
4 limits be required at the time of permitting as a
5 result of using that numeric nutrient criteria to
6 identify waters as impaired for nutrients?
7 A. Well, that would depend on the results of the
8 TMDL, but the expectation would be yes.
9 Q. Suppose the TMDL wasn't done yet. The TMDL is not
10 completed yet. Does the impairment listing then
11 trigger nonetheless the need to impose reductions
12 on the pollutants causing and contributing to the
13 impairment that's been identified?
14 A. Yes, it does.
15 Q. Okay. And that's a federal regulatory
16 requirement, right?
17 A. Yes.
18 Q. As a result of being listed as impaired due to
19 nutrients, right?
20 A. That's correct.
21 Q. What about, would that same impairment listing and
22 designation based on that June 2009 document
23 trigger the need for more restrictive stormwater

1 permitting requirements to reduce nutrient loads
2 from those point sources into the system?
3 A. Yes. Although, that, my understanding is a little
4 bit hazy on that. My understanding is that there
5 are federal regulations which require control of
6 point sources as a priority over nonpoint sources.
7 Q. Okay. I'm going to show you just a series of kind
8 of e-mails, permitting documents, things like
9 that, some of the, some of the e-mails on the
10 wasteload allocation information that you said
11 that DES had been developing. I believe Phil
12 Trowbridge was developing that analysis.
13 A. Yes.
14 Q. First is an e-mail that's dated March 2009, Draft
15 Summary of Farmington Wastewater Treatment
16 Facility Situation. And the original message was
17 from you to Gregg Comstock and Phil Trowbridge,
18 Harry Stewart regarding Farmington.
19 MR. MULHOLLAND: Thanks.
20 MR. HALL: We did mark all the prior
21 exhibits I handed Mr. Currier, right? Okay.
22 Thank you.
23 Q. Where is Farmington located?

1 A. It's on the Cocheco.
2 Q. I'm going to draw your attention to a statement at
3 the bottom where it says, "Greg and Phil are
4 working on more detail, but I think the number for
5 Farmington desire will need to be 3 nitrogen,
6 3 milligrams total nitrogen."
7 What -- can you tell me what that nitrogen
8 limit is all about and why you were thinking a
9 three-nitrogen limit was necessary for Farmington?
10 A. I can tell you it was based on Phil's numbers
11 and -- no, not the June document.
12 MR. KINDER: Oh.
13 A. The wasteload allocation --
14 Q. Actually --
15 A. -- is what it was based on.
16 Q. When you say Phil's numbers, let's just -- because
17 I could have --
18 A. Phil has lots of numbers.
19 Q. I could have given you the wasteload allocation
20 documents first and then maybe I would have had an
21 easier sequence on this, but I just came along
22 this one first. So when you say Phil's numbers,
23 Phil was developing some wasteload allocation

1 values in order to achieve the nitrogen numbers
2 contained --
3 A. Yes.
4 Q. -- in the June 2009 criteria document, right?
5 A. Yes.
6 Q. Okay. And so Phil came up with some calculations
7 and the initial calculation looked like they might
8 need to meet three nitrogen, right?
9 A. That's correct.
10 Q. And was that a more restrictive value than they
11 were currently discharging?
12 A. Yes.
13 Q. Okay. And would that have had an economic impact
14 of some sort on Farmington?
15 A. Yes.
16 Q. Okay. I'd like to look at the page right behind
17 it, because I think that pretty much says exactly
18 what you've just told me. It says, "DES recently
19 published a draft nitrogen concentrations standard
20 for Piscataqua River/Great Bay tidal assessment
21 units. Using these limits, the tidal AUs that
22 receive the Cocheco River drainage are impaired
23 for N and therefore N loads must be reduced."

1 Is that an accurate -- does that accurately
2 reflect your understanding of the impact --
3 A. Yes.
4 Q. -- of the June 2009 numeric criteria? Yes?
5 A. Yes.
6 Q. And it says, "DES proposes to compute separate
7 wasteload allocation for point sources and a load
8 allocation for nonpoint sources over the next two
9 years." That sounds like a TMDL. Is it?
10 A. Our concept was that there would be separate --
11 that the wasteload allocation would be published
12 separate from the load allocation.
13 Q. But that's what a TMDL develops.
14 A. The elements of a TMDL, yes.
15 Q. So the state was developing the elements of a TMDL
16 at this point in time?
17 A. Yes.
18 Q. Okay.
19 A. Although, I should say that my recollection is
20 that the wasteload allocation was developed as a
21 decision matrix.
22 Q. Your recollection is exactly correct. And I've
23 got an e-mail on that which I'll show you in a

1 moment.
2 A. Okay. Good.
3 Q. All right. A curiosity. Whatever happened to --
4 whatever happened to Farmington? What effluent
5 limit did they end up getting, do you recall?
6 A. I don't.
7 Q. Do you know if they got a nitrogen limit?
8 A. I don't recall.
9 MR. HALL: Okay. Let's mark that as
10 Exhibit 38.
11 (Exhibit 38 marked.)
12 Q. Here's another e-mail. This one is a little bit
13 earlier. It's June 4, 2007, quite a few years
14 ago. It was an e-mail from you to Steve Clifton.
15 It had to do with Newmarket. Can you take a look
16 at that e-mail and tell me whether or not you
17 recall that e-mail?
18 A. I don't recall the specific e-mail, but I do
19 recall the conversations --
20 Q. Okay.
21 A. -- discussions.
22 Q. All right. I'll just draw your attention to the
23 second sentence in the first line, second line in

1 the first paragraph. "As you can read, the AU is
2 impaired for DO. The assessment unit is impaired
3 for DO, and violations are likely correlated with
4 stratification during low flushing times."
5 Do you recall that Dr. Pennock evaluated what
6 was causing low DO in the Lamprey River?
7 A. Yes.
8 Q. Is that consistent with what you understood that
9 Dr. Pennock evaluated?
10 A. Yes.
11 Q. Okay. If low DOs were caused by stratification
12 during low flushing time, would that necessarily
13 lead to the need to regulate nitrogen as the
14 solution to low DOs occurring during
15 stratification?
16 A. Well, you notice the word used here is correlated,
17 and not caused by.
18 Q. Ah. Okay. So the fact that there's a low DO in
19 the Lamprey River doesn't mean I've somehow
20 violated the narrative criteria for nutrients,
21 does it?
22 A. No, not directly. Not without further analysis.
23 Q. You would need to -- and what further analysis

1 would need to be demonstrated to show that it was
2 caused by nitrogen?
3 A. Or that nitrogen was a significant contributing
4 factor.
5 Q. Right. What would you -- what would that analysis
6 be?
7 A. Well, I'm not sure off the top of my head, but it
8 would include the -- it would include the
9 stratification effects.
10 Q. But nitrogen doesn't cause a stratification
11 effect, right?
12 A. No.
13 Q. No. Of course not.
14 A. There's no relationship.
15 Q. Right. I mean, so if you were going to regulate
16 nitrogen because of DO in this area, wouldn't you
17 have to show the nitrogen was causing some level
18 of excessive algal growth which was then settling
19 to the bottom and then causing low DO during
20 stratification events?
21 A. There would be need to be something like that,
22 yes.
23 Q. Can you think of anything else that you would say

1 nitrogen would cause in terms of a nutrient impact
2 on DO?
3 A. No.
4 Q. No. Okay.
5 MR. HALL: Let's mark that as Exhibit 39.
6 (Exhibit 39 marked.)
7 Q. I think you'll get a chuckle out of this one. I'd
8 like to show you some e-mail exchanges with EPA
9 and DES regarding the wasteload allocation that
10 Mr. Trowbridge was developing in order to
11 implement the 2009 numeric nutrient criteria.
12 Okay. This is an e-mail exchange that happened in
13 November of 2009, about -- what's November -- like
14 four months after, five months after the June 2009
15 numeric criteria were completed. Can you tell me
16 what this e-mail exchange is all about, Mr.
17 Currier?
18 A. I believe this was the first, the release of the
19 first version of the wasteload allocation for
20 comment.
21 Q. Okay. So the wasteload allocation evaluation was
22 done by Mr. Trowbridge, right?
23 A. Yes.

1 Q. Okay. And the purpose of that evaluation was to
2 try to estimate what the acceptable nitrogen load
3 to the system would be from point sources and
4 nonpoint sources, right?
5 A. Yes.
6 Q. That was all to meet the June 2009 numeric
7 criteria, right?
8 A. Yes.
9 Q. Now, these -- Phil sends these to EPA, I presume
10 with your approval?
11 A. Yes. And --
12 Q. And EPA's reaction is, "Now that DES has been so
13 kind as to tell us and the world what nitrogen
14 limits we should put in the Great Bay permits, we
15 should get together and discuss our next steps."
16 Do you recall EPA being upset or otherwise
17 concerned that you had instructed, had provided
18 instructions as to the appropriate nitrogen limits
19 to meet the --
20 MR. MULHOLLAND: I'm going to object to
21 that one. EPA is an agency and EPA doesn't get
22 upset.
23 MR. KINDER: They don't?

1 MR. HALL: You should have seen them at the
2 oversight hearing.
3 MR. MULHOLLAND: The objection is that
4 individual people might be upset. The agency
5 doesn't have any emotions.
6 MR. KINDER: Understood.
7 MR. HALL: They are an emotionless void
8 that -- all right.
9 Q. So do you recall the exchanges with any EPA
10 personnel being concerned or upset about DES
11 providing instructions on this?
12 A. Yes. Well, I recall that David Pinkham was mildly
13 miffed.
14 Q. And what did David say to you?
15 A. Well, and his -- his -- the reason he was
16 displeased was that we had released it to the
17 world at the same time we released it to EPA.
18 Q. Oh, okay. David Pinkham, was he an EPA permit
19 writer, or who is he?
20 A. Yes.
21 Q. Okay. So he's the person that would have had to
22 have taken these numbers and put them in the
23 permit or explained why he didn't?

1 A. Yes. He's a supervisor in the permit writer
2 chain.
3 Q. Okay. And at this point, I mean, DES and EPA, I
4 mean, you're working cooperatively, right? I
5 mean, you have been for a while?
6 A. Yes.
7 Q. I mean, so it's no surprise, I mean --
8 A. It's a love-hate relationship.
9 Q. There is that. It is a marriage of convenience as
10 well. So, I mean, EPA worked with you and
11 coordinated with the Technical Advisory Committee,
12 right?
13 A. Oh, yes, yes.
14 Q. And the estuary -- New Hampshire Estuary Project,
15 right?
16 A. Yes. We receive substantial technical support to
17 the project.
18 Q. They knew Phil was in the process of developing
19 these wasteload allocations to meet the 2009
20 criteria?
21 A. Yes.
22 Q. As a matter of fact, they assisted in development
23 of the 2009 criteria, right?

1 A. Absolutely.
2 Q. Okay. So, I mean, none of this is a surprise
3 that, you know, development of the criteria, we're
4 going to set wasteload allocations, we're going to
5 come up with more stringent permit limits; I mean,
6 this wasn't a surprise to anybody on either side,
7 right?
8 A. No.
9 Q. Okay. Now, I'd like to draw your attention to a
10 couple of statements within, within this e-mail
11 sequence. Let's see. Let's look at page -- I'm
12 on the third page. I'm kind of like right around
13 yonder (indicating).
14 A. Okay.
15 Q. "For this report DES developed an analytic steady
16 state watershed nitrogen loading model to estimate
17 the watershed nitrogen loading thresholds needed
18 for nitrogen concentrations in the Great Bay
19 Estuary to equal the numeric criteria for
20 nitrogen."
21 This is -- let me just reword this. This is
22 telling EPA and whomever else this was sent to
23 that DES has run a model to ensure that the

1 numeric criteria from June 2009 are met, right?
2 A. (Deponent nodded.)
3 Q. And that the way you meet it is by deciding what
4 nitrogen loadings are allowed from various
5 components contributing to the system, right?
6 A. Right.
7 Q. And those components would include nonpoint
8 sources, stormwater and wastewater, and I suppose
9 industrial discharges, right?
10 A. Right. Although, I don't believe there were any
11 industrial discharges.
12 Q. All right. Now, I'd like to bring your attention
13 to a statement on page, the last page of this
14 e-mail, the one right in the middle of that first
15 full paragraph, where Phil's talking about where
16 the -- where the nitrogen values need to be
17 applied. It says, "The attainment of this water
18 quality would result in -- of water quality
19 objective would result in water quality in Great
20 Bay, Little Bay, and upper Piscataqua to support
21 eelgrass habitat and water quality in the tidal
22 rivers to prevent violations of the DO standard.
23 This decision is supported by the scientific

1 consensus that eelgrass should be present in Great
2 Bay, Little Bay, and upper Piscataqua River, but
3 more research is needed to determine whether
4 eelgrass restoration is an appropriate or feasible
5 goal for the tidal rivers."
6 Can you explain that a little bit to me? I
7 mean, it seems like at this point in time DES is
8 saying, "By June numeric nutrient criteria must be
9 applied in Great Bay, Little Bay and upper
10 Piscataqua."
11 MR. MULHOLLAND: Is that a statement or a
12 question? Objection.
13 MR. HALL: No. This is what -- I'm
14 characterizing.
15 A. I think we described it as a scientific consensus.
16 Q. You know, there's a consensus that those criteria
17 should apply there. But you shouldn't apply the
18 eelgrass numbers in, for example, the Squamscott
19 or Lamprey yet?
20 A. That's right.
21 Q. Okay. And that there needs to be more research
22 before that occurs. Can you tell me who was
23 conducting research on whether or not the eelgrass

1 numbers should be applied in the Squamscott and
2 Lamprey, as you recall?
3 A. Who?
4 Q. Who was doing this research to make this
5 determination?
6 A. I think that's a recommendation. To my knowledge
7 nobody is doing it.
8 Q. Well, do you know what would be the basis for
9 concluding that eelgrass targets should be applied
10 in those tidal rivers?
11 A. A very significant factor would be the historical
12 presence of eelgrass.
13 Q. Okay. I mean, but if eelgrass disappeared 40, 50,
14 60 years ago, how could I know that those numeric
15 criteria needed to be applied in the river to
16 restore those eelgrass? How would I know that?
17 A. I believe that was exactly the discussion that we
18 were hoping would ensue from this correspondence.
19 Q. At this point in time do you know -- so let me
20 just see if I can get this straight because I'm
21 trying to understand. Assume that this is a
22 narrative translator and that, therefore, you have
23 to use some intelligent discretion as to where you

1 apply it. Okay. Let's go with that assumption.
2 The mere historical presence of eelgrass, would
3 that be conclusive proof that the narrative
4 translator must be applied in that water body?
5 A. No.
6 Q. Okay. What else would you need to have to make
7 that decision, in your opinion?
8 A. Well, again, in my opinion, in my opinion there
9 would be a significant amount of judgment involved
10 as to whether it was, I think feasible is the word
11 we used here, whether a goal of eelgrass
12 restoration in those areas would be feasible,
13 would be -- although you can't, you know, you
14 can't use the word feasible under, in the context
15 of water quality standards, but exactly what you
16 had suggested was the discussion. Yes, there was
17 some evidence that eelgrass was there. And the
18 question was, should that drive the application of
19 the, of the, of the standards for eelgrass to
20 these areas. And our suggestion in this
21 correspondence was that perhaps it should.
22 Q. Let's go back to a narrative criteria, because I
23 guess in the end that's what we're saying that

1 we're implementing. The fact that eelgrass were
2 historically present in an area and no longer are
3 historically present, that doesn't mean nitrogen
4 caused the impairment, does it?
5 A. No.
6 Q. No. I mean, there would have to be some
7 demonstration or some analysis of what caused that
8 to occur, right? Correct, before you would --
9 A. Yes.
10 Q. -- conclude nitrogen should be regulated to
11 restore these eelgrass?
12 A. Well, not exactly. And let me use the -- a
13 similar situation. We have a number of rivers
14 that are, where Atlantic salmon are the, are part
15 of the fish population that's included in the
16 designated use. They don't exist. They haven't
17 for a long time.
18 Q. Okay.
19 A. Nevertheless, our application of the narrative
20 standard would include environmental conditions
21 suitable for salmon life and propagation. If,
22 because it's been decided that salmon ought to be
23 restored, or at least -- so therefore, the

1 environmental condition that would allow salmon to
2 exist should be maintained. The same line of
3 reasoning would be applied to an eelgrass
4 situation. Eelgrass doesn't exist. It hasn't for
5 a long -- I'm not saying it should be applied.
6 I'm saying it could be applied. This was a
7 discussion. It doesn't exist, hasn't existed in a
8 long time, yet it's known that it once did, so
9 therefore, it's desirable that the environmental
10 conditions that would allow eelgrass to survive
11 and propagate should be maintained. Those
12 environmental conditions would include sufficient
13 light penetration in these areas that we're
14 talking about to allow eelgrass to survive and
15 propagate. And our analysis that we did leads us
16 to conclude that that would result in the
17 limitation of median annual nitrogen concentration
18 in those areas.
19 Q. Let's just break this down a little bit more
20 thoroughly. I'm on the Squamscott River. My
21 transparency is poor regardless of the nitrogen
22 level present because of colored dissolved organic
23 matter and turbidity. Do I still have to meet the

1 numeric nutrient criteria?
2 A. And this -- again, this is my line of reasoning,
3 but I think it's one that corresponds to others.
4 If eelgrass were once there, then the light
5 penetration conditions that would allow eelgrass
6 to grow were once there and CDOM and turbidity are
7 components of that.
8 Q. All right.
9 A. So if the conditions once existed and if they
10 don't now exist, if the light penetration is
11 insufficient for eelgrass in these areas --
12 Q. Only related to nitrogen is what I said.
13 A. Related to whatever.
14 Q. Okay.
15 A. That is, if we have -- and you notice that if
16 we -- we have, and I believe this is a true
17 statement, in this list of things that we listed,
18 there are some areas that are impaired for
19 eelgrass but not for nitrogen -- I believe that's
20 true -- you could -- we could make that
21 determination.
22 Q. So you could -- so let me separate it out. If the
23 situation were transparency were poor but it

1 wasn't caused by the nitrogen component --
2 A. Right.
3 Q. -- you could say you've got an eelgrass
4 impairment, but you wouldn't put it down as a
5 nitrogen-caused eelgrass impairment?
6 A. That's correct.
7 Q. I should have just sliced it a little more
8 carefully.
9 A. And you would have to do -- you would have to do
10 further causation analysis to figure out what was
11 causing the lack of eelgrass.
12 Q. And do you know if anybody ever demonstrated that
13 regulating nitrogen on either the Lamprey,
14 Squamscott, Cocheco, or upper Piscataqua River
15 could even possibly result in a significant
16 improvement in the transparency levels in those
17 areas?
18 A. Well, as I mentioned, and as it says here, our
19 suggestion is that DO be the end point in those
20 areas.
21 Q. Well, let me -- but answer my question first.
22 We'll get to DO second. I mean, in those areas
23 that appear to be controlled by colored dissolved

1 organic matter and turbidity and that have --
2 well, let's leave it -- colored dissolved organic
3 matter and turbidity, in those areas that the
4 transparency is controlled by that, have you ever
5 seen an analysis that says nitrogen regulation
6 will significantly improve transparency in those
7 areas?
8 A. Let me, let me clarify. The purpose of the
9 wasteload allocation exercise was to run scenarios
10 based on the numbers in the June guidance document
11 that would allow decision-makers and
12 municipalities and EPA to understand the
13 ramifications of the numbers in the June 2009
14 guidance document. The wasteload allocation was
15 basically an exercise in, a modeling exercise in
16 applying these numbers, and some other assumptions
17 about how the -- about, or about production in the
18 watersheds of nitrogen and the various flushing
19 rates, communication with the sea, and to apply a
20 simplified model to get some, some rough numbers
21 that would allow decision-makers to understand how
22 the application of these numbers to the assessment
23 units in Great Bay would affect permit limits for

1 the municipalities throughout the bay. The
2 wasteload allocation had nothing to do with the --
3 Q. Is it really controlling the transparency?
4 A. That's right. This was a number-crunching
5 exercise.
6 Q. Can I, can I just make a statement and see if you
7 agree with this? That the wasteload allocation
8 and the 2009 criteria have a presumption that the
9 nitrogen level does significantly control the
10 transparency that's occurring in various areas,
11 correct?
12 A. Yes. That it -- yes. That assumption is made in
13 the, or that -- it's an assumption that is based
14 on, I would claim, based on very substantial
15 scientific evidence. But it is an assumption.
16 And it is the, the data and the analyses that are
17 used to develop in the June 2009 document are then
18 applied, without further analysis as to whether --
19 you know, without further causation analysis to
20 the individual assessment units. That is true.
21 Q. So then the reply proffer -- so if I have analyses
22 or data that shows that connection is not correct
23 for a particular area, then those criteria should

1 not be applied, right?
2 A. That's correct. And there is a process for that
3 in EPA regulations called site-specific criteria.
4 Q. It's only a site-specific criteria process if you
5 formally adopt it as a regulation?
6 A. Yes. I suppose that's true.
7 Q. Thank you. Let's mark this as --
8 A. The mechanism would be the same.
9 MR. HALL: Let's mark this as Exhibit 40.
10 Thank you.
11 (Exhibit 40 marked.)
12 Q. Back to my last question, though. Have you ever
13 seen an analysis that shows regulating nitrogen
14 for the tidal rivers, and I'll say upper
15 Piscataqua, Squamscott and Lamprey will, in fact,
16 result in a significant improvement in the
17 transparency such that eelgrass can be restored?
18 Has anybody ever showed you a site-specific
19 analysis of the data for those sections that shows
20 that?
21 A. No.
22 Q. Okay. I hadn't seen it either. That's why I
23 thought you might have seen it.

1 A. I'm fairly sure it doesn't exist.
2 Q. Okay. Here's one of these pretty colored charts
3 that you had with the wasteload allocation
4 options. I show you this. I'm showing you some
5 e-mails. They're dated around September 14, 2010
6 and there's a table attached that's a matrix.
7 This was the matrix you were discussing about
8 earlier, right? And this matrix has different
9 nitrogen levels for the wastewater plants
10 depending upon how much nonpoint source reduction
11 gets achieved elsewhere in the system, right?
12 A. Right.
13 Q. Okay. In each of the cases evaluated does the
14 application of the June 2009 numeric criteria
15 result in the imposition of a nitrogen limitation
16 for the wastewater plants?
17 A. Let me take a minute to recall how we used this.
18 This matrix, there is no, there is no column here
19 for current levels of nitrogen.
20 Q. Because all these, all of the analyses that were
21 done indicated current levels of nitrogen were too
22 high, right?
23 A. That's correct.

1 Q. So they all had to be reduced. Okay. So that --
2 and just as I'm pointing out on page 2, the
3 limitations of the wastewater plants could range
4 anywhere from 8 milligrams down to 3 milligrams
5 depending upon the amount of nonpoint source
6 reduction that was attained, correct?
7 A. Yes. Or let's say the scenarios were run with the
8 treatment plants at 8 milligrams per liter -- and,
9 again, that's an annual median -- 5 and 3.
10 Q. And I'd like you to go back to the first page,
11 where it's your e-mail where you're saying, "Hi
12 Carl and Brian. Attached is a draft of the
13 wasteload allocation." It's the very first thing.
14 "I hope it will be useful in our consideration of
15 the Exeter and subsequent permits."
16 Was it -- one of the purposes of developing
17 this wasteload allocation was that it could be
18 considered as a basis for setting the, whatever
19 more restrictive permit limitations might be
20 necessary in the next round of permitting?
21 A. Yes.
22 Q. Okay.
23 A. Yes. And as a basis for conversations amongst the

1 municipalities and EPA about what level of
2 nonpoint source reduction would be, would be
3 considered as appropriate.
4 Q. Okay. That's fine, that clarification. Can we
5 just mark that as Exhibit 41.
6 A. I've got two of them here.
7 Q. Yeah, we do. A question regarding that. Even if
8 we call this a numeric or, rather, a narrative
9 translator, the 2009 document, if it's a narrative
10 translator, it's a new narrative translator,
11 right? I mean, the public --
12 A. Yes.
13 Q. I mean, there's no -- it's not in any prior DES
14 criteria publications, right?
15 A. No. There are lots of publications and we talked
16 about some of them that precede this in the
17 process of developing this.
18 Q. How many other narrative criteria translators has
19 the department developed prior to this one?
20 A. We have the multi-metric biological criteria
21 for -- oh, we have several of them now.
22 Q. Oh, I need to --
23 A. Rivers, lakes. We actually have one for

1 phosphorus for lakes.
2 Q. You've got a phosphorus one for lakes now?
3 A. (Deponent nodded.)
4 Q. And so in terms of the only narrative translators
5 that establish numeric pollutant values, are they,
6 are they only the nutrient-related translators?
7 A. Yes. I believe so.
8 (Exhibit 41 marked.)
9 Q. I'd like to show you -- and this, this is an
10 exhibit that's a document that was exchanged
11 between you and EPA and I suppose, primarily. And
12 it's a timeline of scenarios of Great Bay nitrogen
13 reduction implementation. It's from you to Carl
14 DeLoi. Who is Carl DeLoi?
15 A. He was my counterpart at EPA.
16 Q. Okay. And this document provides a timeline of
17 activities that's going to be conducted by the
18 state and, I guess, by EPA. Do you recall
19 preparing -- or who prepared this document for
20 you?
21 A. Yes. It was me.
22 Q. You did it.
23 A. It was a collaborative effort, but I was the

1 primary author.
2 Q. You were the primary author. Okay. Fine. And
3 this document shows -- and I'll ask, draw your
4 attention to the pages with the, you know, with
5 the chart.
6 A. Yeah.
7 Q. And, actually, I think I have one question in
8 advance of that page. You give some options for
9 implementation on the prior page, and they talk
10 about a collaborative effort with New Hampshire,
11 Maine, POTWs, and it says, "New Hampshire and
12 Maine would coordinate closely and work with EPA
13 on watershed-based NPDES permitting." I mean,
14 that's kind of what was ongoing all along, right?
15 You were trying to work closely with EPA as to
16 what the requirements need to be on the permits?
17 A. Right. Although, a watershed-based approach
18 would, is not something that EPA was doing or is
19 doing at this point.
20 Q. Right. They switched over to a -- they took your
21 wasteload allocation analyses and switched over to
22 a permit-by-permit approach, right?
23 A. Right.

1 Q. Okay. Let's go to the prior -- I'm sorry -- the
2 chart. And I just want to get a feeling for the
3 timeline while we're here. The first thing in the
4 timeline is this nutrient criteria development in
5 303(d) assessment. Okay. There's six points
6 listed under here, going -- everything from, we've
7 got our task force in '05 to, you know, developing
8 the nutrient criteria, look at adding the
9 impairments to the list, then peer review the
10 criteria, then change the impairment lists, then
11 finalize the criteria and then incorporate the
12 final criteria into surface water quality
13 standards rules. Is that the sequence you had
14 understood the state was going to follow on
15 adoption of these numeric nutrient criteria?
16 A. That was -- yes. That was what was understood as
17 of whatever this was.
18 Q. To your knowledge -- I'm sorry.
19 A. 6/2010.
20 Q. To your knowledge has the state, did the state
21 decide to not adopt the numeric nutrient criteria
22 formally into state law as of the date you had
23 left your position?

1 A. No. I believe that it was indefinitely postponed
2 by the subsequent action of municipalities.
3 Q. Oh. Now, it says there was going to be a peer
4 review. So a peer review was supposed to occur
5 with regard to the draft, the June 2009 numeric
6 criteria?
7 A. (Deponent nodded.)
8 Q. Okay. Do you know if the public was supposed to
9 be involved or excluded from that peer review?
10 A. That peer review was through the EPA N-STEPS
11 process. And I am not familiar with the details
12 of it, but that's what happened.
13 Q. Well, did DES ask for the public to be excluded
14 from the peer review process?
15 A. No.
16 Q. No. Did you ask for the public to be included in
17 the peer review process as a result of the
18 comments and questions submitted by, I think
19 primarily through Tupper Kinder's offices to DES?
20 A. We certainly transmitted all of that to EPA and
21 did our best to accommodate the concerns.
22 Q. But it just didn't happen, right?
23 A. Again, EPA has this N-STEPS process which they

1 offered to us basically free as an independent
2 peer review, and we took advantage of it.
3 Q. Did EPA ever tell you that they didn't want to
4 deal with the questions raised by the Great Bay
5 Municipal Coalition or others with regard to the
6 numeric nutrient criteria via the N-STEPS process?
7 A. Not that I recall.
8 Q. Did you have any discussions with Carl DeLoi, who
9 I imagine was the decision-maker, on excluding the
10 municipalities in the peer review process?
11 A. No.
12 Q. Do you know why EPA excluded them?
13 A. I -- well --
14 Q. I'm not asking you to -- I'm not asking you to
15 speculate. I'm asking you like in your
16 discussions do you know what happened?
17 A. No, no. My understanding is that the N-STEPS
18 process was already fairly well along when the
19 municipalities' concerns were put forward, and
20 that was a factor.
21 Q. Do you recall who prepared the charge questions
22 for the N-STEPS process?
23 A. No, I don't.

1 Q. Did DES do it?
2 A. No.
3 Q. Hmm.
4 A. We certainly -- we had input. We had input.
5 Q. Going further down in this list, then it says,
6 "Preliminary Modeling and Allocations. Develop
7 first draft of wasteload -- of watershed nitrogen
8 loading model," under point one under Preliminary
9 Modeling and Allocations. That's consistent with
10 the e-mails that we're seeing back and forth,
11 right? That's the analysis being done by Phil
12 Trowbridge?
13 A. I'd have to -- let's see, there's two things going
14 on. One is the examination of the nonpoint source
15 loads in the watershed, and the other is the
16 wasteload allocation. And they were going on in
17 parallel tracks, and I don't remember which the
18 black dots referred to.
19 Q. Okay. All right. Going back to the nutrient
20 criteria development, there's a line that says
21 that you finalize numeric nutrient criteria based
22 on the peer review. So if the, if the peer review
23 had come back and said the graph that you're

1 using -- and this is, this is Short Exhibit 26,
2 the chart that was used to develop the numeric
3 nitrogen values with the light attenuation -- if
4 they had said, you know, "This is just a
5 correlation. It doesn't show causation. You need
6 to work on the other factors that are actually
7 affecting transparency in the various locations
8 that are plotted on this graph," if they had said
9 that to DES, what would you have done?
10 A. We would have reworked the criteria.
11 Q. Okay.
12 A. And I think that's on here. It was a -- yeah.
13 "Revise." Let's --
14 Q. Yeah. Actually, it's in several places.
15 A. "Revise watershed loading model if nutrient
16 criteria change based on peer review," so yes.
17 Q. So the peer review was considered a pretty
18 critical part of the process. You wanted to make
19 sure you got it right before you rolled it forward
20 into --
21 A. Right.
22 Q. -- the regulatory process. Okay.
23 A. Yes.

1 Q. And I'm just looking at the big picture timing on
2 where you've got adoption of -- incorporate the
3 final nutrient criteria into water quality
4 standards rules. You were looking at like mid
5 2011. And then when I go down to permitting on
6 implementation, the permits weren't supposed to
7 come out until 2012. Or, in other words, the
8 original -- and I'm under Implementation. That
9 says, "Issue or reopen permits" -- yada, yada,
10 yada -- "a watershed general permit if training is
11 successful." And that's all the way over in the
12 third and fourth quarters of 2012, right?
13 A. Right. Although, the idea, it would be -- I think
14 the idea of this, my recollection it would be an
15 ongoing process, you know, beginning in mid 2010.
16 Q. Okay. But the idea was to get the standards
17 adopted before things started ending up in
18 permits, right, I mean, based on this chart?
19 A. Yes, because we had envisioned adoption in, yeah,
20 mid 2012. So actually it looks like we had
21 envisioned starting the NPDES permit process in
22 Exeter in that mid 2010.
23 Q. Right. And that would take a good number of

1 months to complete, right? So you could have had
2 the criteria finalized before the permit came out,
3 right?
4 A. Yes. Although my recollection is that there
5 was -- those two were never tied together.
6 Q. Subsequent to the issuance of this they weren't
7 tied together?
8 A. There was -- obviously, there was an expectation
9 when this was written that there would be
10 rulemaking.
11 MR. HALL: Let's just mark that as
12 Exhibit 42.
13 (Exhibit 42 marked.)
14 Q. Okay. I don't need to go through that. I'm going
15 to just -- Mr. Currier, were you involved much in
16 the back and forth on the draft Exeter permit with
17 regard to the staff comments?
18 A. No.
19 Q. No. Do you know if the staff, did the staff ever
20 inform you that you needed, that the state needed
21 to object to any provisions of the Exeter permit?
22 A. Not that I recall.
23 Q. Okay. To your understanding was the department

1 satisfied or pleased with the draft Exeter permit
2 and the limitations it was intending to impose?
3 A. I don't recall.
4 Q. The department, do you know if the department had
5 a position on it?
6 A. Again, I...
7 Q. Okay. This might be our last document.
8 A. That would be okay.
9 Q. I didn't say it was the last question, but it will
10 be the last document. And this is one I think
11 that's near and dear to all of us, the Memorandum
12 of Agreement with Great Bay Municipal Coalition.
13 And --
14 A. Yes, yes. Many whereases.
15 Q. Yes, many whereases. Can you -- the document
16 that's in front of you, have you seen it before?
17 A. Yes, I have.
18 Q. Okay. Can you please tell us what it is?
19 A. It's a memorandum of agreement between the Great
20 Bay Municipal Coalition and New Hampshire DES
21 relative to reducing uncertainty in nutrient
22 criteria for Great Bay and Piscataqua River
23 estuary.

1 Q. Okay. Did you, did you have any hand in authoring
2 or reviewing this document?
3 A. Yes. I participated in this development.
4 Q. Do you know who the primary -- was there any
5 primary author of this document, or was it a
6 collaborative --
7 A. It was pretty collaborative.
8 Q. Can you tell me who was involved in the
9 development of it within the department?
10 A. Myself and my staff, Harry Stewart, and the
11 commissioner, Tom Burack.
12 Q. Was Ted Diers involved at all?
13 A. Yes, he was.
14 Q. With regard to some of the whereas clauses, I'd
15 like to just get your understanding of the clauses
16 and what appears to be an agreement on this. Can
17 you tell me why this memorandum of agreement was
18 developed and signed by the parties?
19 A. It was an attempt to work collaboratively with the
20 municipalities to resolve the issues that were
21 important to them.
22 Q. Right. And the development of this MOA followed
23 two technical meetings, didn't it, where the

1 communities --
2 A. Yes.
3 Q. -- who did not get their chance to present the
4 information in the peer review brought certain
5 information to the department's attention
6 regarding the transparency nitrogen connection?
7 A. Yes. That's correct.
8 Q. And the department looked at that information and
9 then based on that information decided that
10 proceeding with the memorandum of agreement was a
11 reasonable course of action?
12 A. Right, right.
13 Q. Okay. I'd like to show you, bring your attention
14 to the one, two, three, the four -- let's go to
15 the third whereas clause, one that talks about DO.
16 During the technical meetings we discussed, that
17 we just discussed, the coalition's experts
18 presented some information showing it was not a
19 good connection between chlorophyll-a levels and
20 low DO in the tidal rivers, correct? Do you
21 recall that?
22 A. I certainly recall the discussions, yes.
23 Q. And I think the statement might have been that it

1 would be physically impossible for the level of
2 chlorophyll-a occurring in the Squamscott or
3 Lamprey to be caused by the chlorophyll-a levels
4 occurring in those systems; do you recall that?
5 A. Vaguely, yes.
6 Q. Okay. And so based on that information, I mean,
7 we've got -- and other information I guess
8 discussed there, we've got this whereas clause
9 which says, "The coalition agrees relative to the
10 impairments in the 2010 list attributed to DO and
11 nitrogen there is uncertainty to the extent of
12 nitrogen as a causative factor relative to other
13 factors." And it talks about the need to develop
14 a dynamic hydrodynamic model. Can you tell me
15 what your recollection was regarding what the
16 uncertainty was? It's an uncertainty of a causal
17 connection, right?
18 A. Yes.
19 Q. And so it was -- was the department acknowledging
20 at this point you weren't sure just how much the
21 low DO was really caused by nitrogen?
22 A. I'm certain that the municipalities weren't sure.
23 Yes, yes. There was -- we -- I think it was

1 mutually recognized that there was uncertainty in
2 the analysis and that there was a greater level --
3 and we had known this from the beginning -- a
4 greater level of uncertainty than if we, if an
5 analysis had been done using a hydrodynamic model,
6 a calibrated hydrodynamic model.
7 Q. Regarding -- the next whereas clause is somewhat
8 similar. "The coalition and DES agree first that
9 a weight-of-evidence approach is reasonable." But
10 then it goes on to say, "As relates to impairments
11 of eelgrass loss, there is uncertainty in the line
12 of evidence for eutrophication as the causative
13 factor." Do you know -- do you recall why that
14 statement was agreed upon?
15 A. For the same things we've been talking about, the
16 connection between chlorophyll-a production and
17 light attenuation.
18 Q. And didn't -- do you recall that the coalition's
19 experts presented information showing that the
20 transparency levels in Great Bay apparently had
21 not declined over the period of record of concern?
22 A. Yes.
23 Q. Okay. And do you recall the coalition's experts

1 having presented information indicating that
2 chlorophyll-a had apparently not significantly
3 increased over the period of eelgrass decline?
4 A. I do recall, and I'm sure you have them, a series
5 of correspondence in which we commented on those
6 things. And I don't recall that we ever concluded
7 that series of correspondence.
8 Q. But, I mean, that was actually -- those
9 observations were actually consistent with the
10 observations that we had on the State of the
11 Estuaries Reports earlier, where we showed
12 nitrogen levels changing but the chlorophyll-a
13 levels hadn't changed; I mean, that's consistent
14 with that information discussed earlier, correct?
15 A. My recollection is that the coalition hired the
16 University of New Hampshire to conduct some
17 specific analyses.
18 Q. Well, I guess this is a different point. This is
19 whether or not the chlorophyll -- I mean, if one
20 were claiming the transparency was reduced as a
21 result of nitrogen, you would have needed to
22 demonstrate that the chlorophyll-a levels had
23 increased significantly over the period of record,

1 right? That's the essential piece of information,
2 correct?
3 A. (Deponent nodded.)
4 Q. And that piece of information, shall we say the
5 information did not demonstrate that as you and I
6 have both looked at it across the table that day
7 in April, right?
8 A. We were -- back to the 2009 document. And as a
9 result of lots of, lots of discussion, you know,
10 with you and others, internally, and we were
11 satisfied with the connection, with the, with the
12 demonstrable change in conditions in the bay
13 relative to chlorophyll-a.
14 Q. Are you telling me that that 2009 document
15 contains an analysis confirming that the
16 chlorophyll-a significantly increased over the
17 period of record? I mean, I just want to know if
18 that's what you're claiming is in that document.
19 A. I don't recall. But I do recall that being
20 satisfied that eutrophication, chlorophyll-a
21 production was a significant causative factor.
22 Q. But if the chlorophyll-a -- we'll go back to it.
23 If the chlorophyll-a had not increased, that could

1 not be true, correct?
2 A. Yes.
3 Q. We'll leave it there.
4 A. Yeah.
5 Q. We'll just -- we'll leave it there. Let's keep
6 rolling on to the end.
7 A. I would need to defer to the experts.
8 Q. Okay. This MOA also has an agreement that the
9 communities complete a detailed hydrodynamic model
10 for the Squamscott River, correct?
11 A. Yes. I believe so.
12 Q. And was the intention that the results of that
13 model would control the need for nitrogen removal
14 relative to the Squamscott River?
15 A. That's correct.
16 Q. Okay. So at this point in time DES was still not
17 believing or asserting that the eelgrass values
18 were what was controlling nitrogen requirements
19 for the Squamscott; it was the DO values that
20 should be controlling it, correct?
21 A. Yes. As in a previous exhibit, it was our opinion
22 that that would be the appropriate end point for
23 the Squamscott River, the DO values.

1 Q. Were you aware that shortly after this document
2 was signed and the communities began their work on
3 the Squamscott River on the DO model that DES sent
4 a letter to EPA telling them to apply the eelgrass
5 numbers in the Squamscott?
6 A. No. I don't recall that.
7 Q. Wouldn't -- if that occurred, wouldn't that have
8 rendered the DO modeling effort pretty much
9 irrelevant?
10 A. Yes.
11 MR. HALL: Off the record.
12 (Discussion off the record.)
13 MR. MULHOLLAND: Are we back on the record?
14 MR. HALL: Back on the record.
15 Q. I'd like to ask you a couple of other questions
16 also regarding the things that are mutually agreed
17 upon and resolved; that the second clause talks
18 about not finalizing any of these permits or other
19 draft permits until this collaborative process can
20 be completed. And that was your understanding
21 that the permitting process should be slowed down
22 to try to get the science right?
23 A. Yes.

1 Q. Okay. And the next line, the next whereas also
2 talks about looking at these additional lines of
3 evidence related to eelgrass. So, you know, there
4 was an intent that there should be further
5 investigation to confirm that you either got it
6 right or didn't on the eelgrass nitrogen
7 connection, right?
8 A. Right. And as it says, specifically that there
9 would be additional work done on macroalgae and
10 epiphyte growth.
11 Q. I'd like you to go down to, it's under what the
12 coalition -- actually, no. Let's go to what the
13 DES agrees to do on the last page. The DES --
14 with regard to numbers, number II, where it talks
15 about publish site-specific nitrogen criteria for
16 each assessment unit, was it -- what was your
17 understanding as to what was supposed to happen
18 there? Because the communities I guess more or
19 less complained rather vociferously about the,
20 what I'll call the generic kind of, I'll call
21 estuary-wide analyses that we use in that document
22 to develop the numeric values. And we were
23 concerned that you really needed to take a closer

1 look into the individual units, individual
2 assessment units to see what was needed. Was
3 it -- that's correct, right?
4 A. Right.
5 Q. So was it your understanding that the department
6 agreed with that approach, that, you know, a more
7 careful assessment of the needs of the individual
8 assessment units would be done and then
9 site-specific numbers would be adopted for each
10 one of those?
11 A. Yes. My recollection is that was the intent; that
12 we were, mutually agreed that the hydrodynamic
13 model would generate numbers with greater
14 certainty and identify -- and the model would
15 identify causative factors with greater precision
16 than what we had done.
17 Q. So, if you will, however the new science came out,
18 the chips would fall; the communities could have
19 ended up with a more restrictive number or a less
20 restrictive number, but the updated science would
21 have dictated what it should have been, correct?
22 A. Yes. And the updated science and the selected
23 model in which the physical, chemical and

1 biological processes driving the, either eelgrass
2 or DO would be identified using, using the best
3 science incorporated into a model.
4 MR. HALL: Okay. Can we have a break for
5 just two minutes? I don't think I have another
6 question. I just want -- and I know -- Evan, I
7 think we've run our three and half hours. And
8 Paul has been extraordinarily good about just
9 responding to the questions as well and quickly as
10 he can, so I just didn't know if the --
11 MR. MULHOLLAND: That's fine.
12 MR. HALL: -- rest of the crew had any
13 other questions. Thanks very much, Paul.
14 (Recess taken; 12:43-12:44 p.m.)
15 MR. HALL: Back on the record. We'd just
16 like to mark the memorandum of understanding as
17 Exhibit 43. And I'd like to thank Mr. Currier for
18 his time and attention to addressing these
19 important issues. We really appreciate hearing
20 from him. And I think he shed a lot of light as
21 to the background and history of how we got to
22 where we are today.
23 A. Thank you. I thought about things that I haven't

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ERRATA SHEET AND CERTIFICATE OF WITNESS/DEPONENT

[illegible]

Justice of the Peace/Notary Public
My commission expires: _____

C E R T I F I C A T E

I, Megan M. Hefler, a Licensed Shorthand Court Reporter (License #61) and Notary Public of the State of New Hampshire, do hereby certify that the foregoing, to the best of my knowledge, skill and ability, is a true and accurate transcript of my computer-aided electronic stenographic notes of the deposition of PAUL M. CURRIER, who was duly sworn, taken at the place and under the circumstances present on the date hereinbefore set forth.

I further certify that I am neither attorney or counsel for, nor related to or employed by any of the parties to the action in which this deposition was taken, and further that I am not a relative or employee of any attorney or counsel employed in this case, nor am I financially interested in this action.

Megan M. Hefler, LCR, RDR
Signed this 20th day of June 2012

N.H. LCR No. 61 (RSA 310-A)
My NH Notary Commission expires February 2, 2016

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